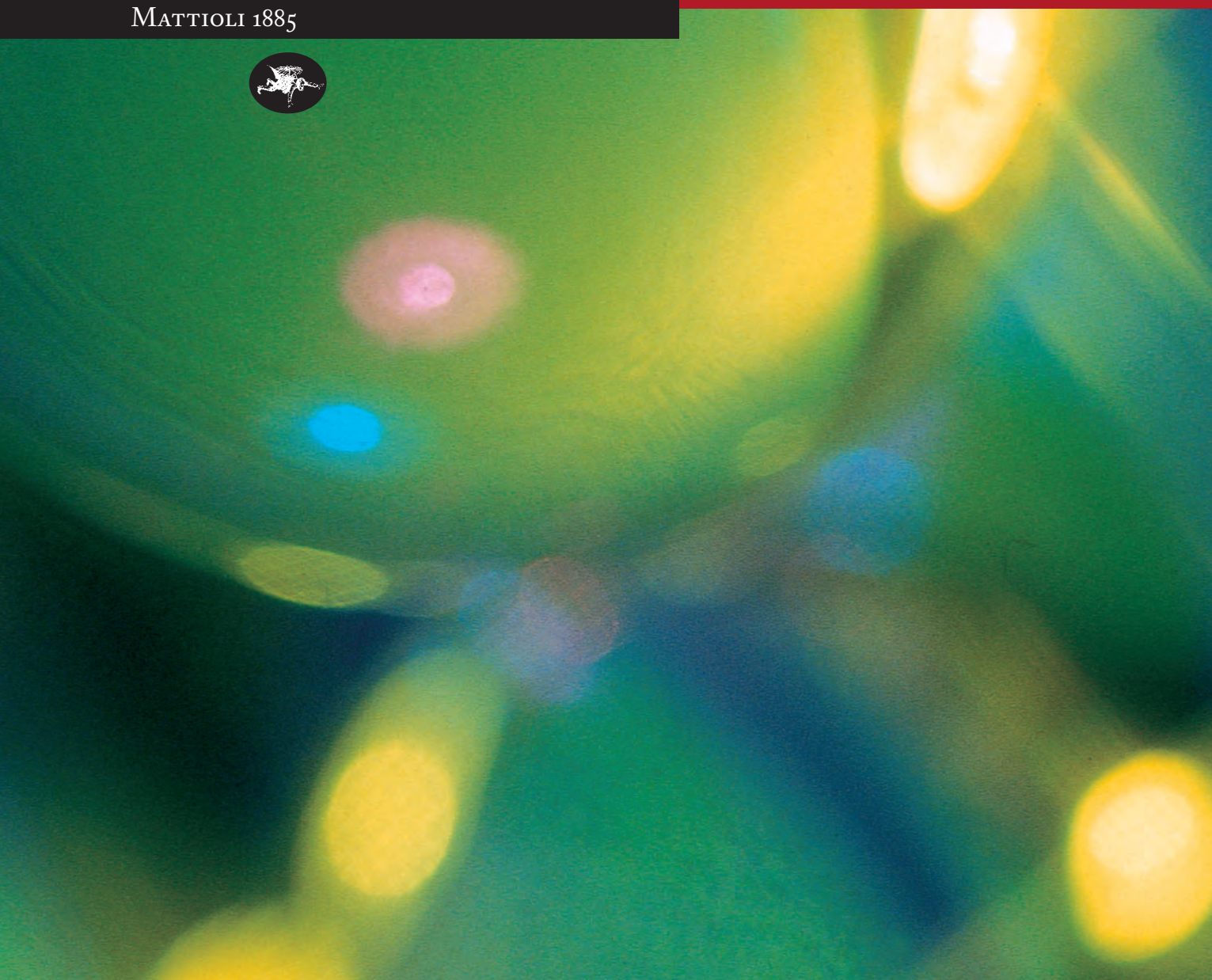
Med. Histor. - Vol. 3 - N. 1 - April 2019 | ISSN 2532-2370

MEDICINA HISTORICA

Organo Ufficiale della Società Italiana di Storia della Medicina

Mattioli 1885



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MEDICINA HISTORICA
Registrazione Tribunale di Parma
n. 20/1997
ISSN 2532-2370
Periodicità quadrimestrale

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Volume 3 / n. 1 April 2019

Medicina Historica 2019; Vol. 3, N. 1: 3-4 © Mattioli 1885

Editorial

Human Sciences?

In the last few years, we have all been encouraged to read the dedication of University teaching of the History of Medicine in a scientific interest group named "Human Sciences". For many of us it seems right to accept this definition that overlooks a variegated horizon that includes many different disciplines, but without leaving the traditional tracks of the disciplinary scientific sector of the History of Medicine. Our field of study over the years has included Paleopathology, Bioethics, Medical Pedagogy, Medical Museology, the recent history of our society and our Journal is demonstrative of this. The discipline is enriched with our strengths and skills that are engaged in these different research branches. However, it seems necessary to suggest caution to who today desires to enlarge the boundaries of the so-called "Human Sciences", proposing to also include disciplines distant from ours such as the Philosophy of Medicine, Anthropology, Sociology, Psychology and so on. If we are to draw on the great chapter of "Human Sciences", we should remember that this is a territory with soft boundaries, a field that, in the definition given to us by Gerard Radnitzky, includes different interests such as those of the Sociology of Science, Psychology of Research, Science, Study of the Economic Aspects of Science etc. They are fields of study and research evidently aimed at various aspects of the scientific enterprise and sometimes grouped under the global label of "Science of Science" which must contribute to the synergistic action of the disciplines aimed at raising the humanistic level of knowledge. A concert of voices, all in perfect harmony of content between them, places History of Medicine among the disciplines belonging to the chapter of human sciences and it seems there is indeed a large consensus on the opinions expressed.

However, it is necessary to remember the precise role that the legislator wanted and wants to assign to the articulation of this discipline in the updated didactic of the degree courses, to be carried out by the students of the medical faculties to understand further these fundamental concepts of the Historical Evolution of the medical values.

During the National Congress of the History of Medicine (Messina, 27-29 October 1989), Professor Leonardo Verga explained how in the debate that was opening: "many researchers of other disciplines, in addition to philosophers, doctors, biologists, theologians, jurists, sociologists, economists, political scientists, psychologists, anthropologists, etc. intervened". This view emphasized the importance of "Human Sciences" to examine the anthropological foundations of the various positions and to define a common operational field. Beyond the specific professionalizing contents of disciplines such as bioethics and history, today, with a general consonance of views, it tends to grasp the common meaning of subjects aimed at creating and nurturing in the student a "humanistic" sensibility, together with a greater awareness of the conceptual and intellectual tools used in clinical reasoning. In my opinion, it is not essential to forge relationships and to combine the specific characteristics of different teachings.

Differences in skills and research fields do not hinder didactic interaction and the many scientific and cultural links can be developed while preserving the distinctions, while still guaranteeing in the didactic programming a non-marginal presence in the traditionally understood History of Medicine, the bearer of knowledge that can expand students' vision beyond the strong biotechnological paradigms of medicine.

Giuseppe Armocida

Medicina Historica 2019; Vol. 3, N. 1: 5-9 © Mattioli 1885

Original article: history of medicine

Charles Stent (1807–1885) between innovation and business: a dentist's role in the history of dentistry and surgery

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Abstract. Charles Stent (1807–1885) is remembered for the origin of the word "stent", now widely used in the surgical practice. The real contribution that Charles Stent actually gave to the progress of medicine, mainly of dentistry, is due to his invention of a compound for dental impression called "Stent's composition". This study means to examine the history and the scientific and commercial impact of Stent's composition. To this aim, judicial reports from the early 20th century, very unusual sources for researches in this area, were used. The trademark possession rights of this product were examined in a court of law and the action is still used today as a reference in Anglo-Saxon case law. After a careful reanalysis of the documents, it can be seen that Charles Stent's invention brought about an important technological contribution to dentistry, achieving immediate success among dentists. Many industries began to produce devices similar to Stent's composition. However, the first company that realized the utility of the new compound for dental impressions and bought the trademark from Stent's heirs was Claudius Ash & Son.

Key words: Charles Stent, dentistry, surgical practice, history of medicine

Introduction

Stents are widely used devices in current surgical practice.

The most common example is the coronary stent that brings patency back to the lumen of occluded coronary arteries thus allowing cardiac perfusion (1). The first recorded use of a stent in cardiovascular surgery dates back to 1966, featuring in a study by Weldon and colleagues, while the first coronary implant on a patient took place in Toulose in 1986 (2).

In the medical literature many a study trying to explain the etymology of the word "stent" can be found, yet its origins are still somehow uncertain.

According to Webster's Dictionary, stent is an obsolete or Scottish dialectal form of stint. The Scottish word includes the meanings "to limit" or "to restrain" but also to stretch or straighten.

Morgan & Osborn consulted the Oxford English Dictionary Word and Language Service (OWLS) and traced the word stent to a verb meaning to extend, set or stretch, and to a noun meaning a stake (for stretching fishing nets) (3).

The most accepted version ascribes the genesis of the word to the Dutch plastic surgeon Jan F. Esser (1877-1946). In 1916 he adopted this word to define a composition for dental impression he used to create fillers to be used in reconstructive surgery of the face (2). The use of the word "stent" then gradually spread to different surgical fields, such as the vascular and the urological, indicating the reconstruction of various structures of the body, thus making them functional again.

The mould adopted by Esser was in fact a mould for dental impressions, which had originally been invented in 1857 by the English dentist Charles Stent

(1807-1885), who named it after himself, *Stent's composition* (1).

It seems likely that the word originated with the dentist Stent, as its other uses were the obsolete English and Scottish meanings. Both alternatives would be correct if the Stent family name originated from the old Scottish word, however, the genealogical studies carried out have not shown this (4).

Regardless of the etymological issues described above, perhaps, Charles Stent still deserves to be remembered in the History of Medicine.

With these words Charles Stent presented his invention in his only publication of 1859:

> "As there is much difficulty experienced in obtaining a perfect bite in cases where entire sets of artificial teeth are required, as well as in articulating sets of teeth out of the mouth, I have the pleasure to offer to the Profession a plan which I have found most efficient. In the first place I obtain perfect impressions of the upper and lower alveolar ridges, for which purpose I use the improved white plastic compound lately introduced by me to the Profession, which sets in the mouth in a minute or two, so that it can be removed without injury to the impression; or my new "wax and gutta-percha composition." Either of these preparations I believe to be superior to anything of the kind hitherto employed (5)".

However was the Stent's Composition really a material that revolutionized the dental practice?

The aim of this research is to re-examine Stent's real historical impact on the worlds on dentistry and surgery and clearly define the boundaries of his scientific legacy.

Materials and Methods

To understand the relevance of Stent's invention, very unusual sources for researches in this area were used.

In England, Stent's composition was the object of a classical judicial debate on trademark ownership rights. As a matter of fact, this case is still being studied and used as a reference in Anglo-Saxon case law. The original judicial reports published on *Reports of Patent, Design and Trade Mark Cases* (the leading full-text law reports in intellectual property) and *The chemist and druggist* (the leading trade journal for the pharmacy community in the UK) between 1911 and 1912, together with primary historical sources, have been examined and contextualized using the historico-medical lens.

Results

Following its introduction into the market, Stent's composition achieved sale success and was recommended by the most famous dentists and became known as "Stent's Impression-composition" or was very often referred to as "Stent's composition". It was sold in tablets. Charles Stent was employed in his business with his two sons Robert (1845-1901) and Arthur (1849-1900). In 1885 the father died, and the company passed to his widow, Caroline Stent, who carried it on with the help of her sons. In 1898 Mrs. Stent, who had registered the trademark, appointed as her sole agents for the sale of the composition a company called Claudius Ash & Sons, Ltd. In 1905 that company, amalgamating with the firm Ash & Co., went to form Claudius Ash, Sons & Co., Ltd. In 1906, her two sons having died, Mrs. Stent sold her business and trademark to Ash (6). "Claudius Ash and Son" started their activity in the field of dental technology around 1820, when Claudius Ash (1792-1854), a goldsmith of Westminster, was asked to apply his skills to make a number of dental prostheses. Originally based in Broad Street (now Broadwick Street, London) the company expanded rapidly (7). After the birth of the era of vulcanite, Ash's firm started an early production and supply of dental gums, in 1857 (8). The latest example is the new design of pliers that Ash's firm introduced, and that is still sold today (9).

In August 1910 Claudius Ash, Sons & Co. became aware that the Invicta Manufacturing Factory were selling a composition similar to the one they had purchased and produced under the name "G. Stent's composition". Ash began an action against the Invicta

accusing them of unfair competition and infringement of trademark, having no right to the use of the name " Stent's" and because of the similarity of their product. On their part, the Invicta defended their products by saying that the employment of the word "Stent's" in dental practice was commonly used to refer to the product that Ash traded. Some witnesses working in dental industry argued that "Stent's composition" meant throughout the Ash composition, and that no other composition was known as "Stent's". During the trial, Mr. W.H. Stent, a nephew of Mr. Charles Stent, said that he did not know any of his family whose name began with "G." Mr. William Edward Gaunez, manager of the Invicta manufacturing, declared in court that he had already begun his production of dental composition with his partner DA Roberts in 1892, and that Claudius Ash, Sons & Co were certainly aware of the fact (10). They carried on business in the neighbourhood of New North Road as Edwards & Co. As evidence of this they showed a prescription for the production of a dental composition: it was associated with the name of "G. Stent's." Also the mould for the manufacturing of the composition was made in 1892. Then Gaunez had been on business with Mr. Robert Tanner as Tanner & Co. Eventually, the business transferred to Old Charlton, where they had been taken over by the Invicta manufacturing (11). Mr. Higson, Ash's director, testified that Mr. William Edward Gaunez wanted to buy Mrs. Caroline Stent's activity and he had entered into negotiations with her. After the meeting, Gaunez told Mr. Higson that the lady asked 5,000 pounds for the business of Stent's composition. Mr. Higson had replied to her that it was a big deal, but Invicta's President was not of the same opinion, stating that the formulae for these compositions were public property.

On March 9, 1911, Ash won the action of first instance. On May 21, 1911, the Court of Appeal overturned the judgment (12). The House of Lords, on May 9, finally decided that it was an issue to be resolved on the basis of the evidence, and in their opinion the decision of the Court of Appeal was correct.

> "No one seemed to have been deceived, and had not been proven that the defendant acted dishonestly or that there was an intention to deceive (13)".

In 1921, Ash wrote in the book "A Century of Dental Art: A Centenary Memoir":

> "... sometimes the impression materials, which have not got the right to be called "stent's "are loosely described as such. For many years Ash trading house has been the only producer and owner of the property rights of genuine Stent's Impression-composition (14)".

The judicial reports, in fact, inform us that during the trial many other companies of a similar composition came out (9):

"Walsh Stent's compositions", sold by A.B. Walsh & Co. at 96 Great Portland Street, London; "Savage Stent s", sold by J.Savage at 203 Camberwell New Road, London; "W. Stent's" of Ward Bros, dental instrument manufacturers, at Kentish Town Road; "H. G. Stent's composition", produced by a company in the province and sold by C. De Trey & Co. of Denman Street, Shaftesbury Avenue. It also appeared that Horatio C. Stent - a son of Robert's and a grandson of Charles Stent's - began to make a composition of a type similar to the one built by his grandfather, before 1898, while he was at the Therapeutic Dental Service Company and in 1899 he registered the "HC Stent" brand (15, 16). Still today the Schottlander Company sells "H.C. Stent" composition.

Discussion

The procedure of stenting has substantially changed available surgical options allowing the establishment of novel procedures such as repair of endovascular aneurisms, coronary angioplasty or biliary drainage. While the word "stent" currently used today likely only rather indirectly refers to the Charles Stent, by re-examining the facts reported in the chronicles, primarily the heated judicial debates, it can be clearly seen how precociously the name "Stent" managed to rise to prominence both in the field of dental and medical practice, immediately following Charles Stent's invention and commercialisation of his dental composition.

The reason for this resounding success are to be found in the flaws of the materials normally used in dental practice before Stent's invention. In the nineteenth century the main materials for dental impression were beeswax and Paris plaster. Both had inherent weaknesses: wax got distorted after removal from the mouth and plaster was very difficult to use. In 1847, the British dentist Edwin Truman (1819-1905) introduced the gutta-percha as a material for print taking, but it was unsatisfactory as it distorted upon removal from the mouth and narrowed during hardening (1). As highlighted above, the breakthrough came instead in 1857, when Charles Thomas Stent, a London-bases dentist, added several other materials to the gutta-percha, notably stearine, a glyceride of stearic acid, palmitic acid, oleic acid, and a substance derived from animal fat that markedly improved the plasticity of the material as well as its stability. He also added talc, as an inert filler to give more body to the material, as well as red colouring (2). This signified a ramarkable technological advancement.

At the beginning of the 21st century, other technological advances have been made in the field of dental impression materials. The short but enlightened work *"Greene Brothers clinical course in dental prostheses in three printed Conferences"*, produced in 1910, represented a point of reference for dentists who wanted to learn the technique for dental impression. In the manual, the Greene brothers, Peter Thomas and Jacob Wesley of Chillieothe (Missouri) described the impression technique of the closed-mouth composition using a material produced by the Detroit Dental Manufacturing Company in 1897 (17), the *Kerr "perfection" impression compound* (18). This compound was presented as the best, which is more explicitly stated in *"Greene System of advance test methods in impression taking with Kerr Perfection Impression Compound"* (19). Both books were published by the Detroit Dental Manufacturing Company. Despite the influence these publications have had on dental practice, Stent Composition has continued to be among the most widely used products for many decades.

In addition, the subsequent cause of Ash's firm and the Invicta provides important insights into the evolution of dentistry. Claudius Ash, Sons & Co proved to be a company able to invest in innovation and research ahead of its times, first recognizing the value of inventions and discoveries that have shaped the history of dentistry. The success and achievement of Claudius Ash, Sons & Co is certainly partly due to their geographical origin. The company was founded in London, the birthplace of several dental innovations, and has expanded throughout the territory of the vast British Empire, reaching a global spread.

The herein analyzed judicial reports show that, more than fifty years after his invention, the interest generated by Charles Stent's composition was still alive and well and was about to pave the way for a major industrial output. Indeed, the explosive combination of an ingenious invention and empire-fuelled trading advantages, clearly indicate how Charles Stent gave a valuable contribution to the technological development of dentistry.

Conclusion

The heated judicial case between different companies competing for trading rights on his dental composition highlight once more and even more powerfully the impact and the role played by the British dentist Charles Stent in the advancement of dental and medical sciences.

His invention was greeted with great enthusiasm by dentists and they really preferred it to other dental impression compositions, because it allowed a more precise mold.

Nevertheless, it also appears clear as the evolution of medicine and its techniques, especially in the modern world, is not only the result of the outstanding discovery attributable to eminent scientists, yet the translation of such innovations into ordinary clinical practice is indissolubly intertwined with a commecial vision applied to a global scale, often the result of advantages nations (in this case Britain) profiting from faster and better communication routes.

In addition, the judicial chronicles offer food for thought about the etymology of stent, proving the passages that led the Stent surname to become a colloquial name. In fact Charles Stent, giving his surname to his invention, transformed it into the proper name of dental impression material: Stent's Composition.

From the legal proceeding between Ash and Invicta Manufacturing it emerges that within a few years stent's composition become a colloquial name for a certain type of composition having the characteristics of that invented by Charles Stent.

Therefore, in any case, it was not the plastic surgeon Esser who transformed the Stent surname into a colloquial name.

Acknowledgements

This article represents only the final stage of several previous unacomplished drafts arranged in different forms and style.

The authors wish to thank all colleagues who in the past contributed their precious suggestions on how to improve the quality of this research.

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Medicina Historica 2019; Vol. 3, N. 1: 10-15 © Mattioli 1885

Original article: history of medicine

Critical to the clinical value of anthropological anomalies of the skull in Forensic Psychiatry and Criminal Anthropology (from the lessons of Professor Pasquale Penta 1899-1900 academic year)

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Abstract. Criminal Anthropology is a very interesting chapter in the History of Psychiatry of the second half of the nineteenth century and the beginning of the twentieth. Here, we present the point of view of Professor Pasquale Penta (1859-1904), director of the important Italian scientific Journal: *Journal of Forensic Psychiatry, Criminal Anthropology and Affine Sciences*, Psychiatric and Criminal Anthropologist, on the "anthropological anomalies". He developed a position toward the clinical value of anthropological anomalies in forensic psychiatry diagnoses criticizing the excessive importance given also to individual anthropological anomalies.

Key words: criminal anthropology, Pasquale Penta, forensic psychiatry, history of psychiatry

Introduction

Among the debated Lombrosian generalizations elaborated in the name of the criminal anthropology, that of the anthropometric studies on the skull aroused criticism within the scientific community of forensic psychiatry. Also, among the supporters of criminal anthropology, there were conflicting opinions about the psychiatric diagnosis made using anthropological tools aimed at defining the "anomalous personalities" (1).

When the theory of evolution entered into Italian scientific circuits, biological anthropology, in particular craniology, a positivist instrument indispensable to investigate various aspects of human life, surpassed the naturalistic boundaries and thus entered the field of forensic psychiatry.

A careful examination of the national scientific literature of those years is essential to define how the study of physical anthropology could diagnose psychiatric diseases or even the criminal type.

In particular, our research focused on what was published in the article of Pasquale Penta (Fontanarosa, avril 1859 – Napoli, 29 november 1904) in the *Journal of Forensic Psychiatry, Criminal Anthropology and Affine Sciences* entitled *On the pathogenetic mechanism, the meaning and clinical value of anthropological anomalies in Psychiatry and in Criminal Anthropology (From the lessons of Psychiatry and Criminal Anthropology dictated to the students of Medicine and Law in the scholastic year 1899-1900)* (1).

As in several publications of the times, also in Penta's article, some anthropologists and psychiatrists contrasted criminal determinism based on individual anthropometry and in particular on the metric observation of the skull.

The positivist thinking together with other new scientific ferments of the second half of the nine-

teenth century led to the creation of a new anthropology able to explain mental illness based on observing the shape of the skull (2). Therefore, anthropological biology entered as a diagnostic, prognostic and interpretative model in the psychiatric field and through the observation of abnormal anthropological features it was thought to estimate, identify and even classify psychiatric and neurological pathologies and of course the various forms of insanity and criminality (3).

Among the many methods of investigation of criminal anthropology, we deal with the chapter of Craniology and Craniometry, in particular the way in which criminal anthropologists, through the cranial anomalies and craniometrics indices, defined the different personalities, the psychiatric diseases and the criminal types.

The atavism theory and Penta's point of view on skull anomalies

Precisely in that historical period in which fossil evidence of our evolutionary (4, 5) past was sought and found (6, 7), the supporters of the Lombrosian theory of atavism shared the idea that each atavistic feature corresponded to a characteristic aspect. Morphological similarities between "the wild man" and the "animals" justified the degree of inferiority in the human organization of "savage societies" (8, 9).

In this way, biological anthropology became part of Psychiatry and Criminology, with new instruments proposed by those who, by assigning to positivism the utmost confidence, suggested the "objective signs" (or features) for the diagnosis of mental illness and criminal personalities (10, 11). Physical similarities between degenerates, savages, and anthropoids had to be proved.

According to the followers of Lombroso, each step towards evolution represents a distance that separates us from the "savages" and the "inferior animals".

Therefore, each evolutionary step had to remove a *pithecoid* character. According to this thought there was, therefore, the possibility of going back, thus undertaking a reverse path with respect to that of evolution. The theory of evolution in this vision would bring to light the lower strata of humanity. If some ancestral characters were repeated on contemporary man, this happened for the degenerate and for the "wild man". For this reason, from the anthropological point of view, these two types of "lower humanity" physically resembled one another.

The ancestral physical characteristics, rather than the physiological features, could highlight the inferiority of human thought.

Turning away from the biological explanations for deviancy typical of Lombrosian criminal anthropology, the criticism of Penta is directed to the observations made on the skulls.

In particular, the criticism of Penta is directed to the observations made on the skulls. The criminal anthropologist also mentions Professor Sergi who has shown that as regards some cranial forms such as *scaphocephaly or mild microcephaly could also exist in today's populations without these being attributed to a degeneration or to a development arrest* (13).

It is also true that Penta says that the survival of certain characters, largely eliminated from the evolutionary progress and selection, could be found in human representatives who are less evolved.

Penta also argues that the anthropological anomalies (in particular here we refer to the cranial anomalies) were not to constitute anything new in the whole family, in the near and even distant ascendants of those who carry them.

According to Penta, this "inferior anthropological-physical type" has a distant origin that dates back to other more ancient conditions, even though the rest of their organism, including in particular the nervous system, could evolve regularly. In saying this, Penta makes us understand his point of view regarding "anthropological anomalies", that is, the individuals who reported them in their physicality could be normal in terms of intelligence and moral character (12, 13).

Penta, for example, believed that certain forms of scaphocephaly with large cheekbones and jaws, almost total prognathism, are not determined by morbid influences but rather by eating habits. A high vegetable or starchy diet, to the detriment of a diet rich in meat, required greater exercise of the mastication muscles and consequently a difference in the bony structures involved.

And as regards the origin of the anthropological anomalies Penta believed that even the absence of healthy hygienic conditions, a poor diet, the early onset of infections, conditions of social unbalance could be decisive factors.

The position highlighted by Penta regarding anthropological anomalies and atavism theory is interesting. He identifies in the degenerates a loss of the evolutionary successes, while the lower social classes are represented by those who have not completed the process of evolution (14, 15). In the second group, there was the ancestral character, true primitiveness, lack of evolution (16). For the physical and mental environment, they did not reach the high peaks of the upper classes.

Those who have stopped in anthropological forms often offer Lombroso the diagnosis of the anthropological type of the "born criminal" (17, 18).

On the use of anthropological anomalies from a clinical point of view, Penta reports that the outward appearance of these criminals resembled savages and anthropoids and could not refer to them as degenerates.

But Penta believes that in addition to simply a morphological factor there was also an etiological link.

Penta, also in his comparative investigations made outside the prison environments, especially among the peasants, recorded what was now signed by Lombroso as the anthropological type of the "born criminal" (19, 20) who carried these characteristics on the skull (prognathism, elusive, size of the cheekbones, receding chin, robust jaws, etc.) (21, 22).

Penta believes that these characteristics do not depend on a state of degeneration but, rather, on a phenomenon of limitation.

With regard to Penta, those peasants have lapsed from an anthropological level and due to unhappy conditions of existence, they could not get to more evolved anthropological forms.

Therefore, in degeneration there is greater disorder and the ontogenetic arrest is not uniform and general to reproduce in all its parts a phylogenetically archaic and brutal type (23).

It is evident that, according to what has been said, the degenerates and the primitives can resemble each other and also be confused, but this does not mean that they are profoundly different due to their formation, their meaning and their importance.

In particular, Penta questions whether these features constitute an anomaly.

They are an anomaly if they relate to the evolved average of other men in the same country, not only for aesthetics but also for organic resistance itself and for the psychic level, which are much less in them than in the most evolved. According to Penta insanity, crime and other diseases are destined eventually disappear during the incessant path of evolution.

Penta recalls the work "on the pathogenetic mechanism" where he already claimed that many anthropological anomalies (of individual or singular appearance) are not really degenerative but rather mark a state of primitiveness that continues and is perpetuated in certain social strata of the race.

Craniometry studies and Penta's criticisms

Penta criticizes, above all, the fact of having given great importance to anthropometry, of having created a quantity of curves and semi curves, of diameters and circumferences, which have interest and value in a long series of observations and cases, they have no value on the individual case and are more useful as an ethnographic and taxonomic study of man in general. It is in the calculation of the cephalic index that the criticisms are concentrated with a certain intensity. Based on the greater or lesser length of it, positivist anthropologists distinguished human races in dolichocephalic, mesocephalic, and brachycephalic.

In Italy, craniometric studies of anthropologists of the positivist period revealed that all three varieties (dolichocephalic, mesaticephalic and brachycephalic) are present in the various provinces and none of these can be considered exclusively dolichocephallic or brachycephalic.

Several anthropologists, however, claimed that the overall shape of the skull-facial could describe figures related to the personality: cuboid, ellipsoid, pentagoid, ovoid etc ...(24, 25).

Anthropometric studies received a strong impulse from the works of Broca and Virchow.

The analysis reported by Penta revealed that the

brachycephalic are prevalent among the Lombard-Veneto, Piedmont, Romagna, Liguria, Abruzzo regions and dolichocephalic are prevalent among the Calabrian, Campania regions (26, 27). Sergi also showed, with his studies, that one could not make a human classification by calculating the cephalic index. The cephalic index according to Sergi may represent one of the signs of the shape of the head and not the reason. Consequently, Sergi believes that the cephalic index has only secondary importance in the study of human races and therefore has no interest in any other applications in forensic psychiatry and criminal anthropology (28).

Although, when it comes to exclusively long skulls (ultradolicocephalic, from 66 downwards) or excessively short (ultrabrachicephaly from 90.00 upwards) they can be defined as anthropological anomalies and are accompanied by other physical notes such as scaphocephaly, oxycephaly, plagiephaly until the trococephaly (29).

Individual anthropometry, especially craniometry, could have no value in psychiatry and criminal anthropology.

However, Penta points out the fact that anthropometric studies have become so important to find application in police judiciaries because they are used in the identification of the delinquent in the system called Berlintonage, a system proposed by Bertillon in France (30).

The system also entered Rome and other police headquarters of the kingdom under the name of the Anthropometric Office.

Still according to Penta, no cranial form can indicate more or less in mental development (31). The author recalls that the most famous men in poetry, arts and sciences also show, in the cranial forms, the signs of the province to which they belong and are therefore dolichocephalic, brachycephalic or mesaticephic.

Penta thus dismantles the theories of De Laponge and of Ammon (32) for which dolichocephaly would be, among the social classes, those who have greater initiative, suffer the power of social capillarity more and then move more, rushing from the rural towns to the city, from small to large human centers, so they cannot so easily be accepted and supported.

The clinical value of anthropological anomalies

The distinction of anomalies in atavistic, pathological, monstrous and teratological was highlighted by different authors of that time. The term atavistic anomalies interpreted the abnormal features, meaning arrests of individual development (ontogenetically) as an abbreviated phylogeny, and then reproduction of animal characters, considered well below the phylogenetic profile (33).

For many of these anthropological anomalies, the comparison with the taxonomic characters of the lower animals was made and the result was more than surprising. For example, some anomalies of the cerebral convolutions (34, 35), the external prolongation of the parietal occipital sulcus - that in monkeys is a physiological character - the brevity of the calcarine fissure, the ethmoidal rostrum of Vogt and so on, due to many anomalies of hands and feet etc ...could be associated to the anthropological anomalies (36).

Penta also speaks of some anthropological anomalies of an endogenous and non-exogenous nature and are those that lead to the serious result of psychic and anthropological degeneration.

These are conditions that originate from fetal life, produced in the toxicity of the mother's blood.

The descendants of syphilitics, of alcoholics of the gouty, of the mad etc., are often born with rather serious anthropological anomalies.

Conclusion

Penta insisted that completely normal man, that is without imperfections, can only be the product of the artist's imagination. Each of us has a weak side in our intelligence, in character and anthropological forms without being ill.

If we considered ill all those who presented some imperfections, or anthropological anomalies, we should think of the sick as ancestors. When in the impossibility of adaptation it therefore transmits anomalous forms, especially regressive.

According to the criminal anthropology of that time, there are regressive forms of evolution that many times could also be considered physiological.

Even in normal, therefore, anthropological anomalies can be found.

Each of us has some debased side both in intelligence and in anthropological forms, that the typical man does not exist without imperfections.

With regard to Penta, atavism could explain the anthropological anomalies and that these, however, would be nothing more than characters reappearing in man after having been erased or covered and reproducing what is normally found in this or other living beings below of modern civilized man (37).

To conclude Penta believes that if you wanted to accept the significance of these abnormalities, these must be taken into consideration if they are numerous and important in an individual and that they had to be found in relation to the nervous system (38).

According to Penta, therefore, these anomalies could have clinical, diagnostic and prognostic importance when their value is accepted. That is to say that on equal conditions the subject that presents many anthropological anomalies will be affected by degenerative mental illness (39).

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Medicina Historica 2019; Vol. 3, N. 1: 16-24 © Mattioli 1885

Original article: history of medicine

The history of public healthcare in Russia

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Abstract. The article presents the historical evolution of healthcare system in Russia, from early Soviet times until the fall of the Soviet Union and the end of the communist era. The development of the healthcare system is described and analyzed in relation to key public health indicators, and the role of developed principles in modern Russian healthcare system. The paper deals with a peculiar system: in international literature four healthcare models are identified, the so called Semashko model was developed and firstly structured in the USSR and secondary applied in other communist countries. Considering that nowadays most of the world countries, including Russia, use Bismark or Beveridge systems, a serious historical reconsideration appears be useful.

Key words: public health, history of healthcare, soviet healthcare system, Semashko model, russian healthcare

The Russian healthcare system originated from district healthcare* (*Russian: земская медицина*) in the early XX century. It is during this period that forward-thinking ideas of healthcare provision were born. District healthcare was present in 34 provinces of the European part of the country. Its goals included free healthcare with free medicine distribution via outpatient clinics, free medical care in hospitals, free surgeries and obstetric services as well as prevention of and sanitary measures against epidemics. In 1910, these 34 provinces took almost 50% of the area of the European part of the Russian Empire with Caucasian territories (2 490 000 sq. verst* out of 5 000 000 sq. verst) and were the home to 60% of the population of these areas (74 million people, rural population). At the core of district healthcare were the principles of universal access and equal use of district healthcare centers by the populace with careful consideration of the local environment and conditions. By following these principles district healthcare earned and maintained the trust of the people and was gradually developing with new medical stations, outpatient centers and hospitals appearing where they were most needed. The growth of district healthcare had a profound influence on the making of the whole Russian healthcare. The principles of district healthcare were used to establish healthcare in cities. However, in cities sanitary measures were prioritized (1).

Apart from the forward-thinking district healthcare, the country had municipal (*Russian: муниципальная*), factory (*Russian: фабрично-заводская*) and private healthcare. Thus, at the beginning of the XX century, healthcare provision was a complex system with varying governing bodies. Along with state medical facilities it featured municipal, factory and private healthcare. Medical institutions were managed by multiple ministries, government agencies (*Russian: ведомство*), country and city self-governing bodies as well as private, charity and public offices. In emergency situations during epidemics the government was forced to establish inter-institutional committees to deal with medical issues concerning the whole country. Healthcare was especially poor at the periphery of the Russian Empire where it was only accessible to the wealthy.

* **Versta** (sing), **verst** (pl) (*Russian: верста*) is an obsolete Russian unit of length equal to 1.0668 kilometers.

Sanitary conditions in the Russian Empire were among the worst in Europe at the time. The country was constantly ravaged by outbreaks of infectious diseases, especially epidemic typhus with over one million people infected from 1907 to 1917. In 1915 approximately 800,000 cases of epidemic diseases were registered in the Russian Empire including 43,000 cases of cholera and 178,000 cases of typhoid fever. Smallpox killed 32,000 people in 1909. Social diseases like syphilis, trachoma, gonorrhea and tuberculosis were widespread. Total mortality was 25-30 per 1,000 individuals and average life expectancy was approximately 40 years. Of about 6 million babies born annually, 2 million died of diseases and due to malnutrition. Average infant mortality at the end of the XIX century and beginning of the XX century was 250 per 1,000 live births. In Western Europe and the USA demographic characteristics and health indicators were far better. In 1910, total mortality was 17.7 in France, 13.5 in Great Britain, 16.2 in Germany and 15.9 in the USA (per 1,000). Average life expectancy in these countries exceeded 50 years for both sexes. However, birth rates were 20-30% lower than in the Russian Empire (45 per 1,000 before 1914). In 1910, in several less economically developed countries (India, Egypt, Thailand, Costa Rica etc.) birth rates and mortality rates were 30-45 and 25-33 per 1,000 individuals respectively. The main driving forces behind high mortality rates in the Russian Empire were infectious diseases (smallpox, epidemic typhus, tuberculosis, pneumonia etc.), while in developed European countries and the USA the major causes of death were noncommunicable diseases like cardiovascular disorders and cancer (2).

After the start of World War I amid the growing discontent with government policies, healthcare institutions often had no coordination with the military. Socioeconomic problems and epidemics drew public healthcare even deeper into deterioration. Under circumstances such as these the government showed special interest in establishing a central healthcare governing body to unite the disconnected medical centers. As a result, on 21 September 1916, the Central Board of Health (*Russian: Главное управление здравоохранения*) was established. It can be rightfully considered the first ever prototype of a ministry of health in the world. However, several days before the February Revolution of 1917 the Central Board of Health technically ceased to exist due to strong criticism on the part of the Russian MPs (State Duma Deputy, *Russian: депутат государственной думы*) (3).

The aftermath of World War I and the following February and October Revolutions of 1917 was not limited to chaos in Russian politics and economy. Public health was also affected. Epidemics of typhoid fever, epidemic typhus, cholera and other infectious diseases ran rampant. With insufficient funding, healthcare relied on district budgets. There was a lack of qualified medical professionals, healthcare centers and medication.

The sad state of affairs was further aggravated by the Civil War, military action, epidemics, famine as well as collapse of manufacture and agriculture. The critical situation with healthcare coupled with inadequate infection control and unsanitary conditions all over the country forced the Bolsheviks to give absolute control over all healthcare aspects to a single authorized governing body that would be under full protection of the Bolshevik government.

In July of 1918, the government of the Russian Soviet Federative Socialist Republic (RSFSR) passed a decree to establish the People's Healthcare Commissariat (*Russian: Об учреждении Народного комиссариата здравоохранения*), the world's first governing body overseeing all public health in the country. Nikolai Aleksandrovich Semashko (*Russian: Николай Александрович Семашко*) became the first People's Commissar of Health (Fig. 1). He envisioned a free professional healthcare system that would be readily available to everyone. The Bolsheviks also urged the people to take an active part in organizing healthcare.

The memoirs of the first People's Commissar of Health contained the following reasoning behind centralization of healthcare: "… centering all public health on a single authorized governing body, the People's Healthcare Commissariat. Instead of fragmented district management, scattered material and human resources, lack of coordination between various medical agencies in charge of public health, we created a single governing body aimed at combating diseases with maximum conservation of resources and acting in accordance with a developed plan" (4).

Establishing a single center for managing healthcare of the republic became a turning point in how

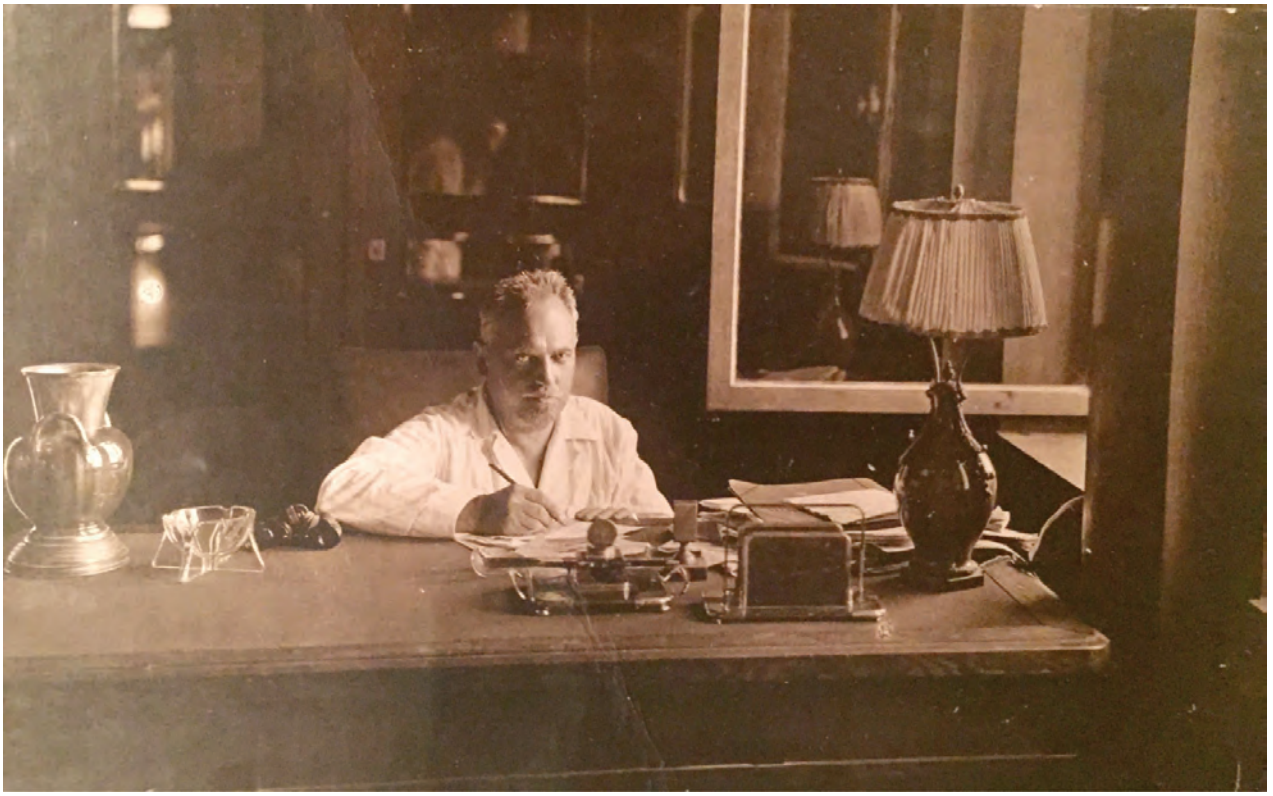

Figure 1. N.A. Semashko at the workplace in the People's Healthcare Commissariat (mid-1920s) (published for the first time ever).

medical professionals viewed the new government. Witnessing the Bolsheviks' dedication to improving public health, doctors and nurses supported the efforts of the People's Healthcare Commissariat to combat epidemics.

During the Civil War, the lack of medical staff in the areas under Bolshevik control became critical. It was a problem that the People's Healthcare Commissariat was tasked with solving promptly. So, from 1918 to 1922, sixteen medical faculties were opened and higher medical education became free and available to all citizens of the RSFSR. Apart from that, in order to provide as many areas of the country with medical help as possible, all medical professionals started mandatory labor service in 1918. It provided an effective solution to the imbalance in healthcare workforce deployment across the country. The USSR eventually adopted a more liberal way of distributing medical graduates.

In March of 1919, RSFSR healthcare reached another equally important milestone. The VIII Congress of the Russian Communist Party (b) defined the primary objectives for and development strategies of soviet healthcare. Disease prevention through extensive national campaigns to improve health and hygienic conditions became top priority. Later the People's Healthcare Commissariat established the Department of Public Health Education. Public health education became the foundation of all preventive strategies and was not only limited to improving material conditions of the populace. Periodic screening (*Russian: диспансеризация*) became the main tool of preventive medicine. A whole network of specialized early treatment and prevention centers (*Russian: диспансер*) as well as healthcare facilities for preventing and treating occupational diseases was created. Systematic screenings were carried out in factories with safety hazards and unsafe working conditions (5).

New prevention facilities appeared, namely specialized early treatment and prevention centers, night sanatoria, consulting centers (*Russian: консультации)*, infant-feeding centers (*Russian: молочные кухни*), day nurseries, child welfare organizations, child health-

care organizations, public health education centers, etc. Public health education was widely spread with multiple houses and "corners" of public health education (*Russian: дома и уголки санитарного просвета*) and propaganda via speech, printed materials, cinema and radio. Moreover, prevention strategies were seen as means to reduce the workload of medical facilities and therefore to cut down on healthcare expenses in the republic (6).

In Soviet Russia, specialized early treatment and prevention centers (*Russian: диспансер)* not only provided medical help to the people, but were also responsible for sanitary conditions of their area. They kept records and statistics and carried out inspections. The functions of specialized early treatment and prevention centers included establishing constant communication with workforce organizations, offering social aid in outpatient departments and at home, early disease detection during screenings and public health education in their areas. In Russia today, any citizen with compulsory health insurance has free access to screening.

One of the key contributing factors to improving public health in the RSFSR was the district principle (*Russian: участковый принцип*). Given the geography of the country with low population densities and vast territories, the district principle became the foundation for all rural healthcare. The district principle in the RSFSR evolved in new conditions across the whole country. The district physician was given a certain populated area where he or she basically gained the functions of a family doctor. The district principle grew into its ultimate and complete form in the system of soviet specialized early treatment and prevention centers. These centers – apart from treating patients seeking medical help – were proactive in detecting diseases during screenings, examining the population of their area and starting early treatment. They also closely inspected and improved the working environments and living conditions, identified causes of and conditions for various disorders and prevented diseases from spreading. The union of preventive medicine and treatment strategies in the casework of specialized early treatment and prevention centers played a major role in soviet healthcare: healthy people were also subjected to thorough monitoring. Most importantly, specialized early treatment and prevention centers in the USSR were state institutions responsible for all the population of their respective regions (not only for select categories of citizens) (7).

The history of disease prevention in soviet healthcare would be incomplete without sanitary and disease control measures, an instrument that proved critical for public health. The USSR built an orderly system of national sanitary and disease control agencies that was tasked with preventive measures and sanitary control. It supervised countrywide procedures aimed at pollution prevention and environmental protection, as well as improvement of the working environments and living conditions. It also monitored sanitary and hygienic conditions and antiepidemic activities on the part of various agencies, enterprises, organizations and the population. Health improvement and antiepidemic measures were based on careful study of sanitary and antiepidemic conditions of populated areas and objects under control located there, as well as monitoring incidence of infections, infestations and occupational diseases (8). The efficacy of soviet preventive strategies and sanitary measures was acknowledged abroad: professors Oskar Vogt and Lipmann who visited the USSR in 1924 witnessed outstanding achievements in prevention and sanitary conditions brought about by the People's Healthcare Commissariat (9).

Today the importance of sanitation and epidemiologic services is acknowledged worldwide. The World Health Organization's International Health Regulations have legal effects in 196 countries across the globe. The main aim of these regulations is to prevent diseases that may cross borders, respond to health risks and take measures against the spread of diseases.

Thus, the People's Healthcare Commissariat introduced revolutionary principles of healthcare organization for the time: unity of national healthcare services, guarantee of free medical care for every citizen and prevention-oriented measures. Novel organization approaches to delivering medical help were introduced along with new healthcare institutions. Despite the harsh conditions after the Civil War and military intervention, new public health and microbiology research institutions and laboratories were established. Experimental institutions for biology, biochemistry, tuberculosis etc. were also created.

The People's Healthcare Commissariat managed to substantially reform the principles of healthcare pro-

vision across the RSFSR: healthcare institutions were nationalized and united, free home care service was established, ambulance service was optimized, public health education was employed and measures were taken to eradicate social diseases and epidemic typhus. Soviet sources estimated that approximately 10 million people were infected with epidemic typhus and relapsing fever at that time. A solid antiepidemic system was born while the country was combating epidemics. As mentioned earlier, it was the foundation of national sanitary and disease control agencies (4).

Another critical social and economic factor in the USSR was maternity and child welfare services. They provided an opportunity for women to combine child care with community work and a proper environment for children to develop physical and mental strength. Maternity and child welfare services ensured that all women and children could receive free expert medical aid through outpatient consultations for pregnant women and children under 3 years of age, children's homes (*Russian: дом ребенка*), mother-and-baby homes (*Russian: дом матери и ребенка*), day nurseries and infant-feeding centers. Maternity and child welfare centers also provided public health education on hygiene in women and children and took preventive measures that concerned the whole population. In 1922, the Central Research Institute for Maternity and Infanthood was established in Moscow. Similar facilities were opened in Kharkiv (1922), Baku (1927), Kiev (1929), Minsk (1931), Rostov-on-Don (1932), Almaty (1932) and other cities. In 1928, the country boasted over 2,000 consulting centers for women and children, 27,000 beds in maternity hospitals and a rapidly growing system of day nurseries. Maternity and child welfare services were also on the rise in rural regions with establishment of consulting centers for women and children, kolkhoz (*Russian: колхоз*) maternity hospitals, obstetric centers and day nurseries. Within only two years, over 600 maternity hospitals, 1,600 day nurseries (for 100,000 children) and about 200 infant-feeding centers were built. At the end of 1940, maternity and child welfare services were a well-organized state-run system that prioritized preventive strategies. In 1940, the country had over 8,000 consulting centers and outpatient clinics for women and children, 90,000 beds for children, over 147,000 beds for pregnant and parturient women and employed 19,400 pediatricians, 10,600 obstetrician-gynecologists and 68,100 midwives. In 1980, there were over 12,000 pediatric outpatient clinics, 10,000 consulting centers for women and many nursery schools for 14 million children (10).

Another milestone in public healthcare was establishment of the first Department of Social Hygiene at the medical faculty of the First Moscow University in 1922. For several decades to come, it steered the development of medical science in the RSFSR. The need for a solid scientific base for fundamental and practical approaches to solving social problems and improving hygiene was apparent to many soviet medical professionals. A social approach to explaining and combating many diseases was essential for improving public health. However, a department popularizing progressive – for the time – preventive strategies was alien to the conservative minds of the medical society in soviet Russia. The key aspect of soviet social hygiene was prioritizing social factors over biological ones: creating a healthy environment was paramount. Social factors were deemed the primary driving force behind diseases (11).

Development of the state healthcare system in the USSR charted a course for higher medical education. For the first time in Russia medical education became available to everyone. High-achieving students were allowed a stipend; dormitories and canteens were opened. The network of medical universities was spread across the USSR to provide remote areas and republics with medical professionals. State higher education institutions emphasized the importance of training members of indigenous communities to become healthcare professionals. In 1946, the country had 72 medical higher education institutions (in contrast to 13 medical faculties in 1913) with 116,000 students (in contrast to 8,500 in 1913). Mandatory distribution of medical graduates across the network of medical facilities allowed for staffing even the most remote rural areas and played an important role in organizing national healthcare (12).

Scientific work played a major part in public health in the USSR. Soviet healthcare providers envisioned that medical science would blaze the trail for soviet healthcare. Scientific work was deeply ingrained into medical practice and penetrated healthcare institutions. Healthcare centers had academic advisors who offered consulting services to medical professionals on

obstetrics, internal medicine, surgery, as well as combating cancer, tuberculosis and other disorders. The key property of research efforts in the USSR was complex organization: scientific institutions were managed by a unified governing body and worked in close contact and collaboration.

Occupational health and safety regulations also contributed to improving healthcare in the USSR. Child employment was prohibited in factories and plants, teenage labor was only allowed if it had no health hazards and was limited to 4-6 hours a day. For adults, the working day was cut down to 8 hours or 6 hours in hazardous industry. It is interesting to note that while Australia was the first country to legally acknowledge the eight-hour work day in 1848, the majority of industrialized countries adopted it much later. Certain labor unions and manufacturing companies started limiting working hours as early as the XIX century. However, legal acts were introduced later: in France in 1936, in the USA in 1937, in Japan only in 1947. Germany only adopted the eight-hour work day following the revolution of 1918.

Social security insurances guaranteed that women were offered paid maternity leave of 12 weeks for those involved in intellectual labor and 16 weeks for those involved in demanding physical labor. Mothers with infants were allowed to leave the workplace every 3 hours to feed them. Nursing mothers had financial aid so that they could buy child care items and had priority in food supply distribution. According to law, medical examination was mandatory for those seeking employment (especially in hazardous environments). Routine health screenings were also required for those with harmful labor conditions.

Resorts and sanatoria in the soviet republic underwent massive reorganization. At the beginning of the XX century, Russia had 36 resorts with 60 sanatoria (3,000 beds) and several koumiss-cure centers (*Russian: кумысолечебница*). However, in the Russian Empire, only the well-to-do upper echelons of society could afford them. The soviet era saw the recovery and rapid growth of resorts and sanatoria. The decree on Therapeutic Resources and Lands of National Importance that was passed on 4 April 1919 was the most important among them as it basically transferred the management of all resorts to the People's Healthcare Commissariat of the RSFSR in accordance with the principal of unity of all soviet healthcare. The decree became the foundation for all future medical practice in resorts and sanatoria. The RSFSR was the first government in the world to take the responsibility of providing healthcare in resorts and sanatoria to the populace as a separate free type of medical aid (13).

In 1923, the government established the Central Resort Department (*Russian: Главное курортное управление*) of the People's Healthcare Commissariat headed by N. A. Semashko. For the first time, industry-sponsored sanatoria appeared in resorts and labor unions were actively involved in healthcare provisions. To increase patient capacity of resorts and sanatoria, they remained open for longer periods of time and resorts of national importance were operational throughout the year.

With the advent of the first five-year plans (*Russian: первый пятилетний план*) for the national economy at the end of 1920s, the country began building new recreational facilities. At the beginning of 1940, the USSR had a total of 3,600 sanatoria and holiday vacation centers for 470,000 people. During World War II, the sanatoria were converted into a network of base hospitals. In the 1980s, there were 14,000 sanatoria for 2.5 million patients. A wide network of healthcare-oriented resorts and sanatoria can be rightfully considered the crown jewel of soviet healthcare (14).

When the first five-year plans for the national economy were completed or nearing completion, the availability of healthcare skyrocketed. In 1929 the country possessed 246,100 hospital beds, 40% more than in 1914 (175,600 beds). The number of beds in children's hospitals and maternity hospitals increased by 60%, from 89,200 in 1914 to 143,600 in 1929. The number of medical professionals increased threefold from 19,785 in 1914 to 63,219 in 1929. Medical universities produced 7 times more graduates (900 in 1914 vs 6,200 in 1928). The number of home visits by medical professionals of all agencies and organizations in cities grew from 391,400 in 1913 to 7,304,100 in 1930, which is 18 times greater (15).

Despite inherent disadvantages of the five-year plans for the national economy of the USSR, by 1940 the growth of material resources, equipment and manpower in healthcare greatly exceeded that of the Russian

Empire. The number of physicians increased sixfold to 130,400 and the number of nurses – to 412,000. Hospital capacity grew fivefold and the number of outpatient centers increased from 1,230 in 1913 to 13,000 in 1940. Instead of 4,282 rural medical centers and 5,111 feldsher's stations (*Russian: фельдшерский пункт*) before the revolution, in 1941 the country had 13,500 medical centers and over 18,000 feldsher's stations. Moreover, a wide network of sanatoria and holiday vacation centers capable of housing 45,000 people was created. No developed country in the world could match this number of medical facilities at that time. By 1940, the USSR had a half (or even more) of all physicians and hospitals in Europe. It is especially worth mentioning that during World War II the surplus of material resources, equipment and manpower in soviet healthcare was enough to offer adequate medical aid to both the armed forces and civilians. When the war ended, the whole USSR, including its healthcare and national economy, entered the restoration period which lasted until 1950. Despite that, the numbers of medical facilities, hospital beds and physicians were even higher than before the war. In 1950, the country had 265,000 physicians, 719,400 nurses, 18,300 hospitals with 1,010,700 beds. By 1965, the number of physicians increased to 23.9 per 10,000 population (vs 14.6 in 1950), the number of nurses increased to 73.0 per 10,000 population (vs 39.6 in 1950) and the number of hospital beds increased to 96.0 per 10,000 population (vs 57.7 in 1950) (2).

At the beginning of the 1990s, the USSR possessed over 3.6 million hospital beds, trained over 1.3 million physicians and established hundreds of higher education institutions (16).

The soviet healthcare system was not without its drawbacks. One of the biggest mistakes of the government was its conservative strategy aimed at extensive growth from 1950 to 1990. It failed to correspond to reality of the time when the rate of renewal of medical technologies exceeded one generation of people, for the first time in human civilization. Moreover, once the five-year plans for the national economy of the USSR were met, the healthcare system became funded residually which often translated into lack of modern equipment and drugs in medical facilities.

Another equally serious disadvantage of the evolution of soviet healthcare was that the government had no long-term plans for the healthcare system. Even the main policy of soviet healthcare in the second half of the XX century – prevention – kept focusing its attention solely on sanitation and antiepidemic measures failing to pay proper attention to noncommunicable diseases. In the first half of the XX century, when infections and infestations were the most prevalent and responsible for the highest mortality rates, preventing them was reasonable and justified. However, the second half of the XX century required drawing the attention of healthcare services to noncommunicable diseases.

Human wellbeing is another crucial factor one has to take into account when discussing healthcare in the USSR. As of today, income inequality in the Russian Federation is incredibly great which is noted by experts worldwide.

Despite its drawbacks, the soviet healthcare system (Semashko model) is considered by the majority of Russian experts to have been one of the best in the world, because overall it met the requirements of quality, availability and provision of healthcare services, drugs and materials. After the collapse of the USSR, the healthcare system was stagnant: funding was greatly limited, highly-skilled medical professionals emigrated, medical research came to a halt and manufacture of drugs and medical equipment declined dramatically.

Crisis phenomena in the socio-economic life of Russia in the 90s of the XX century adversely affected the health of the population – decrease in the life expectancy of citizens (65.3 years in 2000), low birth rate (8.7 per 1000 in 2000), high death rate (15.3 per 1000 in 2000), rapid increase of mortality due to cardiovascular diseases, accidents, poisonings and injuries, an increase in the incidence of tuberculosis and other socially significant diseases.

Changes in the socio-economic and political conditions in the country led to the need to reform the health care system and move to a new way of financing. In Russia, in the early 1990s, a system of compulsory medical insurance of citizens was introduced, basic regulatory documents were adopted (Federal Laws No. 323-FZ of 21 November 2011 «On the Protection of Citizens' Health in the Russian Federation», No. 326-FZ of November 29, 2010 «On Compulsory Medical Insurance» and other laws). These laws state gave a new status to medical institutions, expanded the rights of

patients to choose a treating doctor and medical institution, to receive quality and safe medical care, and others.

The Program of State Guarantees of Free Medical Care to the Citizens of the Russian Federation (September 11, 1998) was also implemented, that allowed to transform the principles provided by domestic healthcare leaders – general accessibility of medical care, priority of prevention and of maternal and child health, and other principles.

In the early 2000s, National Project «Health» (January 1, 2006) developed priority areas for the health protection in the Russian Federation and additional funds were allocated for the prevention and treatment of cardiovascular, oncological and other noncommunicable diseases, as well as for the implementation of Federal programs to combat socially significant diseases.

Also, on the basis of the Decrees of the President of the Russian Federation, the main directions of the "Concept of the demographic policy of the Russian Federation up to 2025" (Approved Presidential Decree Russian Federation dated October 9, 2007 No. 1351) and measures for their implementation were developed. The key priorities are: reducing the mortality rate of the population, raising the birth rate, reducing the maternal and infant mortality rates, strengthening the reproductive health of the population, improving the health of children and adolescents, increasing the active life of the elderly, creating the conditions and motivation for healthy lifestyle, significant reduction in the incidence of socially significant diseases, improving the quality of life of patients suffering from chronic diseases and people with disabilities.

In 2014, the State Program of the Russian Federation "Healthcare Development" was adopted (April 15, 2014 No.294). It provided medical and organizational measures aimed at increasing the provision of high-tech medical care to the citizens, staffing and material and technical equipment of medical organizations providing primary health care, introducing modern telemedicine technologies, reproductive technologies and others.

The results of the National Projects and Federal Target Programs successfully implemented since the mid-2000s in the context of the transition of the health system to compulsory health insurance were an increase in the life expectancy of citizens, which in 2017 reached a national historical maximum of 72.6 years, a decrease in mortality due to all the main causes, including oncological diseases, reduction of maternal and infant mortality, which also reached the lowest in the entire history of our country.

The message of the President of Russian Federation, Vladimir Putin to the Federal Assembly (March 1, 2018) noted that one of the priority areas should be an increase in the life expectancy of Russian citizens to 80 years by 2020, creating conditions for active longevity of older people.

Thus, despite the fundamental changes that have been taking place in the organization, management and financing of the health care system of the Russian Federation in recent decades, many of the theoretical propositions proposed by the prominent health care organizer N.A. Semashko have not lost their topicality. These areas are the priority development of primary health care for the population, the system of maternal and child welfare, priority for the prevention of noncommunicable diseases, clinical examination of the population, active promotion of healthy lifestyles and others.

The study of the history of development and reform of the health care system of the Russian Federation makes it possible to see new perspectives for increasing the efficiency of the system, improving the quality of medical care, and increasing the duration and quality of life of the population.

Conclusion

1. The reforms carried out in recent decades and the reorganization of the health care system of the Russian Federation were aimed at preserving the priority principles in the provision of medical care to the population laid down by the prominent Soviet health care leader N.A. Semashko. These principles are the general availability of medical care to citizens, social equality in obtaining medical services, and an emphasis on the preventive focus of medical organizations.
2. The implemented Program of State Guarantees of Free Medical Care to Citizens of the Russian Federation, the National Project "Health",

"Concepts of the Demographic Policy of the Russian Federation for the Period until 2025", the State Program of the Russian Federation "Health Care Development" contributed to a decrease in the mortality rates of the population of the Russian Federation from major NCDs (cardiovascular, oncological and other diseases), increase fertility rates, increase life expectancy of the population, increase accessibility services for citizens and patient satisfaction with medical care.

3. Currently, the Russian health care system is faced with the following tasks: further reducing mortality rates from NCDs and preventable diseases, increasing birth rates, reducing maternal and infant mortality rates, increasing the life expectancy of citizens, creating conditions for active longevity of older people, and improving quality and availability of medical care, the introduction of modern medical technologies for effective prevention, early diagnosis and treatment of the most important NCDs (cardiovascular, cancer, COPD, diabetes mellitus and others) and reforming of system of medical education.

Acknowledgment

The authors are grateful to Elena Gavrilovna Farobina for providing materials.

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Medicina Historica 2019; Vol. 3, N. 1: 25-28 © Mattioli 1885

The History of Medicine told in four paintings

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Abstract. The paper focuses on the volume "The history of medicine in four paintings". Starting from this brief and original text, the article introduces a current reflection on the importance of the diffusion of medical - scientific thought and the educational role of the history of medicine, in particular on the ethical and cultural values that the study of this fascinating discipline has in training of students and future physicians.

Key words: history of medicine, Tomaso Oliaro, Minerva Medica

During the International Exhibition of Medical Arts, the International Festival of Scientific Medical Film and International Medical and Surgical Meetings held in Turin from May 29 to June 6, 1954, the book "The history of medicine in four paintings" was presented (1). The author of this original text was Tomaso Oliaro (1909-1986), professor of History of Medicine at the University of Turin and Director of Edizioni Minerva Medica S.p.a., a company founded in 1934 by his father Gugliemo.

Dr. Guglielmo Oliaro was a doctor in Turin, who was in charge of science, but also of literature, art and music. His son Tomaso has followed in his footsteps in the medical profession, but also in the passions, organizing during his career many initiatives that combine science and art.

In a few pages the History of Medicine is retraced. As a scholar of the subject, Oliaro introduces the reader into the historical-scientific world by stating that the History of Medicine is born and merges with that of man and how man is changeable and variable. He tells it through a "courageous undertaking" in four paintings (2), created by the painter and set designer Giuseppe Gheduzzi (1889-1957); the images of these paintings (which can today be seen in the meeting room in the Minerva Medica Palace in Turin) are shown at the end of the text. Each painting represents an era of medicine: ancient medicine, medicine of the Middle Ages, medicine of the Renaissance and modern medicine (3). On each canvas the images of the main scientific stages and their protagonists have been represented from top to bottom. In the first two pictures, we find the sun and the moon, together with the earth and the cosmos gave rise to empirical medicine (Fig. 1). The figure of Hippocrates stands in the canvas of ancient medicine; the corpus Hippocraticum and the humoral theories (later Hippocratic-galenical) on the physiology and on the origin of the diseases were the bases of the medical-scientific doctrine for centuries. The History of Medicine with Depictions of the Ebers Papyrus (1550 BC), the Code of Hammurabi (2000 BC), the cranial drilling of pre-Columbian America, prehistoric Venuses and the instruments of the first surgeons. In the second picture (Fig. 2) the representation of medicine during the Middle Ages is dominated by faith (placed at the top right), which at the time was believed to intervene in the healing of man and was repeatedly invoked by the sick, but medical science was also affected by the influences of the Arab world with Avicenna's Canon, which combined medicine with philosophy. This picture shows the majolica vases representing the birth of pharmacies, the techniques of Rolando da Padova, the well-known Scuola Salernitana (the first example of a lay school for

Figure 1. Ancient Medicine from "La storia della medicina in quattro quadri". Torino: Edizioni Minerva Medica, 1954.

Figure 2. Medicine of the Middle Age from "La storia della medicina in quattro quadri". Torino: Edizioni Minerva Medica, 1954.

the in the physicians Christian Middle Ages), the Ortus Sanitatis, an example of the medicine practiced by the monks and the therapeutic properties of officinal herbs; the second painting concludes with the image of the goddess Minerva and the inscription "Vi et mente", motto of the same Minerva Medica publishing house. The painting representing Renaissance medicine (Fig. 3) illustrates the foundations of modern medicine. At

Figure 3. Medicine of the Renaissance from "La storia della medicina in quattro quadri". Torino: Edizioni Minerva Medica, 1954.

Figure 4. Modern medicine from "La storia della medicina in quattro quadri". Torino: Edizioni Minerva Medica, 1954.

the top are joined, as if they were opposed, but both existing realities, the anatomical theater of the University of Padua, which symbolizes the birth of the first major medical universities, and magic with its rituals, its herbs and witchcraft. At the center of the painting is depicted Leonardo da Vinci, figure that best represents the spirit of the Renaissance and artist in which the manual skills merged with the scientific intuition

making it become one of the most famous lovers of anatomy (his works of art are masterpieces of scientific anatomy). Are then depicted among the many Andrea Vesalius, in which the anatomical study and artistic reproduction gave rise to high quality tables, Galileo Galilei, recalling the innovative experimental method, Gerolamo Fracastoro, recalling the studies on the epidemic diseases of 1500, the innovative surgeon Ambrogio Parè, Gaspare Tagliacozzi for plastic surgery and William Harvey, considered the father of modern circulatory physiology. The last painting is dedicated to a series of famous scientists who have enriched the panorama of modern medicine (Fig. 4). There are the protagonists of the Medical Clinic, Legal Medicine and Labor Medicine, Transfusion and Vaccination, Histology, Physiology, Biology, Radiology and Microbial Pathology. This last picture closes with the phrase of Leonardo da Vinci "Do not turn those who are stars fixed" as a warning to all scholars and scientists to never stop in research, experimentation and study.

This brief volume gives a good idea of how far the medicine and surgery has gone from its beginnings to today. The paintings evoke the past, but also look to the future, underlining how the study of the History of Medicine is fundamental in the training of young physicians and researchers (4, 5). The motivation and determination to produce new knowledge and to investigate stems from the example of the great figures of the past who have contributed with their work and their discoveries to the development of medical science. The continuous and progressive development of bio-medical sciences makes it impossible to think of exercising a health profession without knowing and understanding the History of Medicine (6). This discipline is not only the history of medical pathologies and techniques, but it is also the history of man, places, environments and society in which physicians carry out their profession. The History of Medicine teaches us to reflect on the past, on what has been done and what what we can do in the future, thus changing our behavior. The correct analysis of the past of medical science allows us to understand the progressive stages of medicine, helping to integrate and complete the preparation of those who will dedicate themselves to the medical profession (7).

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Medicina Historica 2019; Vol. 3, N. 1: 29-30 © Mattioli 1885

An important personality of psychosurgery: the italian psychiatrist Mario Adamo Fiamberti (1894-1970)

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Abstract. This letter is about the life and the research of an Italian psychiatrist, who had national and international reputation in the 20th century, especially for his interest in "psychosurgery".

Key words: Mario Adamo Fiamberti, psychosurgery, transorbital leucotomy

Adamo Mario Fiamberti (1) was born in Stradella (Pavia) on the 10th september 1894. He graduated from medical school in Torino (1920) and became professor of "Clinical of Nervous and Mental Illness" in 1931. At the same time, he worked as asylum doctor. From 1921 he worked in a psychiatric hospital in Brescia for 10 years, except to a brief period spent in Verona (1927-1928). In 1932 he was named Director of Psychiatric Hospitals in Sondrio, in 1935 Director of psychiatric hospital in Vercelli and in 1937 director of Psychiatric Hospitals in Varese, where he stayed until 1964, when he retired. He died on August 31, 1970 (Feltre).

Fiamberti studied two main scientific topics: the application of acetylcholine-shock and the transorbital leucotomy in mental illness treatment.

In the first case, the studies about acetycholine-shock were based on other scientific experiences: the insulin shock (Manfred Sakel 1932), cardiazol shock (Ladisluaus von Meduna 1936), electroconvulsive therapy (Ugo Cerletti and Lucio Bini 1938).

However, the acetylcholine-shock therapy did not excite much interest and the psychiatrists abandoned soon this biological approach.

Instead, the studies about leucotomy had more results. In 1936, Antonio Caetano Egas Moniz published the results of frontal lobe surgery in the psychosis treatment. He made some cranial holes to reach the prefrontal lobe with a leukotome. Whit this instrument, he destroyed the connections in the prefrontal white matter, obtaining an improvement of psychotic symptoms. This surgical approach was tried out and used in the treatment of severe mental disorders, especially behavioural disorders and acute agitation. In 1949, Moniz received a Nobel Prize in Medicine for his researches about psychosurgical procedures (3).

Although Fiamberti studies were based on Moniz approach, he was searching for a procedure more simple than cranial perforation. He performed the operation forcing the leukotome trough the bony orbit at the back of the eye, as well as in the cerebral venticulography. Fiamberti designed and made a special leukotome, which cut the nervous fibres with a golden leaf (4). The Fiamberti technique was largely practised and appreciated, until it was discovered by an American Neurologist: Walter Jackson Freeman II, who modified and improved the surgical technique, naming it "lobotomy" (5).

The neuro-surgical treatments of mental illness were used for more than two decades, exiting scientific and media (articles, novels, films) interest (6). However, in the 1950s, the use of these procedures decreased dramatically and numerous countries banned it. Many reasons caused this change: the lack of strong scientific evidences, the numerous and severe side effects, but above all the introduction of psychotropic drugs.

Nevertheless, we remember Mario Adamo Fiamberti as an important clinician and researcher in the area of mental disorders and their treatment.

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Medicina Historica 2019; Vol. 3, N. 1: 31-38 © Mattioli 1885

Necropsy reports and anatomo-pathological observations from the archives of the Grand Ducal Medici family of Florence. Part I - The 16th century

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Abstract. During the Renaissance and Early Modern Age dissection began to be practiced for medico-legal purposes, in order to investigate the causes of death. In particular, during the 15th century evidences of autopsies performed by doctors on their private patients emerge. These dissections were requested by those families who can afford the expenses, in order to search the possible presence of hereditary diseases and to predispose a prevention and cure. The diffusion of this practice is attested also by the work of Antonio Benivieni (1443-1502), who is considered a pioneer of the pathological anatomy. The extremely rich documentary archives of the Medici family, one of the most important family of the Italian Renaissance, report several description of necropsies carried out on the bodies of the members of the family. The analysis of these reports offers important direct information on the autopsy practices performed by court surgeons of the members of an aristocratic class in a period comprised between the 16th and the first half of the 18th century, and allows in some cases also to propose a retrospective diagnosis on the diseases that afflicted the Medici. In this paper the analysis will be focused on the evidences about autopsies carried out during the 16th century. An evolution through time can be observed, as from the first very brief notes at the beginning of the period the reports become more detailed and accurate at the end of the century.

Key words: Renaissance, Medici, autopsy, embalming, court surgeons

Introduction

During the Renaissance and the Early Modern Age, the opening of a corpse began to be performed privately on request of the families in order to examine the internal organs and to investigate the causes of death. The subjects of these autopsies belonged to high or aristocratic classes and were patients of scholarly doctors or lettered surgeons; their reports consisted in brief texts describing individual cases and not all provide a theoretical explanation on the causes of death. In several cases, the physicians and the surgeons who practiced the autopsy had cured the dead during their life; consequently, the documents referred also the description of the symptomatology suffered by the patient before the death (1). These autopsy practices should be distinguished from the public dissections and the anatomical research, whose subjects were criminals, condemned or poor patients of hospitals.

The Medici have been one the most powerful families of Italian Renaissance, accumulating vast wealth through banking, commerce and skillful political ventures. The extremely rich archival documents of the Medici family of Florence, whose corpses were submitted to autopsy after death, refer in several cases details about the clinical history of the main person-

ages and the report of the necropsy performed by the court surgeons.

The results of the analysis of the autopsy registers can be compared with the information provided by paleopathological and osteoarchaeological studies performed on the skeletal remains of some members of the Medici family, exhumed from their tombs in the Basilica of San Lorenzo in Florence. Indeed accurate examination of the skeletons revealed evident signs of autopsy practices such as horizontal and oblique craniotomies, longitudinal and transversal cuts of the sternum, and sectioning of the sternal extremities of the ribs (2).

Materials and methods

The majority of information about the Medici family deriving from archival documents and written sources are collected in the fundamental work of the Florentine physician and historian Gaetano Pieraccini (1864-1957) wrote in 1924 and reprint in 1986. These documents provide relevant information about the practice of autopsy carried out on the bodies of the Medici family for medico-legal purposes in a time range comprises between two centuries that is when the Medici sovereigns of Tuscany were nominated Grand Dukes. The period examined begin from the first half of the 16th century, when the death of Giovanni dalle Bande Nere and Maria Salviati, parents of Cosimo I, Patriarch of the Grand-ducal branch of the Medici, occurred, and when attention to the pathological anatomic study of corpses began to flourish and the necropsy reports started to be descripted. The information end with the first half of the 18th century, when the branch of the Medici extinguished because of the death, without heirs, of Giangastone, the last Grand Duke.

In this work, the autopsy reports of the members of the family who lived within the 16th century will be analyzed according to a chronological order based on the year of death. For many members of the noble family there are detailed 'clinical records' of diseases occurred during life, but no autopsy reports are mentioned, so they will be excluded from our dissertation.

Giovanni dalle Bande Nere (1498-1526) and Maria Salviati (1499-1543)

Documentary sources are silent about a possible embalming or autopsy on the corpse of Giovanni delle Bande Nere, famous condottiero and father of Cosimo I, the first Grand Duke of Tuscany. The circumstances of his death (the amputation of a leg) probably prevented the surgeons to open the body. In fact, the skeletal remains of Giovanni present no traces of craniotomy nor of thoracotomy (3, 4).

Maria Salviati, wife of Giovanni dalle Bande Nere and mother of Cosimo I, died at the age of 44. A letter of Campana, Secretary of Cosimo, to Pierfrancesco Riccio, the majordomo, asks instructions "about the opening of the Maria's corpse" (5, 275). Nevertheless, analyses carried out on the skeletal remains of Maria evidenced no traces of autopsy practices; probably the body was open without to produce cuts in the bones.

Eleonora from Toledo (1522-1562)

Written sources attest that Eleonora from Toledo, the wife of Cosimo I, contracted tuberculosis at the age of 30 and was consumpted by the disease until her death, caused by an attack of pernicious malaria (6). She was submitted to autopsy, which ascertained that "her illness was caused by a damaged lung and from long time" (7). This short sentence shows the scarce propensity of the doctors to properly describe the organs, in fact it is not listed any specific pattern of the pulmonary parenchyma, but only a generic damage. The lungs of Eleonora, chronically exposed to the disease, probably presented some typical aspects of tuberculosis, such as caseous necrosis, pleural adhesions, calcific nodules or parenchymal scars. Other omit aspects may have been congestion, oedema or emphysematous changes. The doctors did not even report the simplest and most basic data such as the exterior appearance of the lungs, their consistency and their colour.

Skeletal remains of Eleonora do not shows traces of craniotomy nor thoracotomy.

Giovanni (1543-1562) and Garzia (1547-1562)

According to written sources and to paleopathological investigations, Giovanni and Garzia, the two sons of Cosimo I and Eleonora, died of malaria (4;, 8). In fact, in October 1562, Cosimo, Eleonora and their children, Giovanni, Garzia and Ferdinando, visited the marshy Maremma country near Grosseto, where malaria was endemic. On their way back to Florence, Eleonora and all the sons suffered from sudden irregular bouts of fever. They died in a time span of three weeks and the only survivor was Ferdinando, who later become Grand Duke. Written sources wrote about Giovanni that "once dead, [the physicians] opened the corpse and found all the internal organs very beautiful" (9, 131). This finding is compatible with a death for malaria, whose lesions were not detectable in that time at the sole macroscopic examination. Written sources are silent about a possible autopsy on the corpse on Garzia.

Paleopathological examination of the skeletal remains of Giovanni and Garzia revealed no traces of craniotomy nor thoracotomy.

Cosimo I (1519-1574)

Cosimo I, 1st Grand Duke of Tuscany, died at 55 years of age for "catarrhal fever", to be interpreted as bronchopneumonia. In the written sources, the autopsy of Cosimo is thus justified: "The physicians, in order to surely know the cause of his disease, and to prevent the onset of corrupted smells from the body, opened it" (10, 672). Nevertheless, no other information about the autopsy are reported. The skeletal remains of Giovanni only present traces of craniotomy.

Giovanna of Austria (1548-1578)

The first wife of Francesco I, Giovanna of Austria, survived six troubled deliveries, but died because of the seventh childbirth at the age of 30 for the rupture of the uterus. The description of the Grand Duchess labor is very detailed. On April 9, after the first throes, a shoulder of the foetus appeared, but the midwife instead of facilitating the childbirth, attempted to put inside the arm, then the newborn died. Then Giovanna expelled the placenta, with great stupor of the physicians. A surgeon attempted to pull out the foetus, but unsuccessfully, and at 5 in the morning of April 10 Giovanna died. The day after her death "that was Friday, she was opened, and the child was found outside the uterus, and the cervix was ragged […]. The rest of the body was badly disposed, as she had the spine distorted in the shape of a S […]; she had the liver hard and white, without blood, the stomach thin like a veil, the lungs hanged upon the chest and inflamed, in the rest she was fine" (11). This report attests a detailed autopsy, aimed at investigating the thoracic and abdominal cavities and organs, revealing uterus rupture with fetus in abdominal cavity and scoliosis of the column; the stomach seems affected by atrophic gastritis and the liver by hepatic fibrosis.

Anthropological examination of the skeletal remains of Giovanna demonstrated absence of craniotomy, but evidenced a cut in the sternum.

Don Filippino (1577-1582)

Don Filippino was the seventh child and eldest son of Francesco and Giovanna. The cause of his death could be referred to an acute infectious disease, as death was preceded by fever. After death the "Prince was opened and the skull was found full of water, the lung hard and arid in several part, and the liver discoloured and similar to a cork; generally in all the body there was very little blood, so that the physicians judged that he was very ill and he could survive very little" (11). In another report, we can read: "The same physicians who cured him, sawed the head, removing the skullcap, where they found under the first layer [i.e. the *dura mater*], over the brain, almost a glass of water. Which they thought and believed that it was the real cause of his death. Then they found, once open the body, the liver spongy and hard, and every other things healthy and beautiful" (9, 215). In the crypt of Giangastone two children were found corresponding to the age at death of Filippino, but the identification was sure thanks to the presence of craniotomy in one of the children. Furthermore, the cranium exhibited

an enlargement of the vault, indicating that the child was affected by a non-severe hydrocephaly, caused by rickets (12); this finding corresponds to the description of the court physicians who found an accumulation of liquor in the head of don Filippino. There is a clear link between the macroscopical aspect of the liver and the rickets, which is a well-recognized complication of chronic liver disease in adults and children (13). Two different sources described the liver of Filippino as hard, pale and spongy: these aspects could be pathognomonic of a chronic liver disease. Prolonged intra and extra hepatic bile ducts injuries in children as a result of inflammatory, autoimmune, genetic, structural, drug induced and metabolic disorders may cause cholestatic liver disease (CLD) (14) even though viral hepatitis seems the leading cause in children, among which prevalence of chronic Hepatitis C was highest (15). The most frequent symptom of the CLD is the recurrent severe fever, that in fact troubled Don Filippino for his entire (short) life, so much to be defined sickly and delicate. One of the complications of chronic liver diseases is osteodystrophy (like rickets) which is reported in 9-83% of cases due to decreased intestinal absorption of minerals and impaired hepatic hydroxylation of vitamin D (16).

The presence of the clothes prevented total recovery of skeletal remains; however, it was possible to examine the ribs and the sternum by in situ X-ray, which did not reveal signs of cuts.

Francesco I (1541-1587)

Francesco I, 2nd Grand Duke of Tuscany, died of pernicious malaria at 46 years of age, after a deer hunting in the marshy Arno river valley, with his second wife, Bianca Cappello, who died with the same symptomatology 24 hours later (8). The court physicians report a detailed description in Latin of the autopsy of Francesco. We report the English translation: "The corpse of the Serenissimo Francesco de' Medici, second Grand Duke of Tuscany, was opened and examined after twelve hours from the death and these things were found. Little muscles appeared under the fat, in fact all parts of the abdomen were very fat. The stomach was very thin and frail in consistency, and its upper part was very red and inflamed, and occupied a not small part of the viscera, and this color in the median part was more intense and reddish; inside the stomach, a small amount of "chylous" material was present, as derived from chewed food and liquids recently eaten. With regard to the kidneys, the right looked a bit softer, otherwise both the right and the left were good as much as the ureters and bladder; neither renelle nor stones were found; the spleen had a natural aspect, but the liver was absolutely in poor conditions. It appeared brown in color with compact consistency, and it was so hard that it was not possible to dissect it in the right way. The gallbladder was much larger than normal, and so full of bile to appear swollen and relaxed. In the veins, as appeared from the sections, there was not much blood. After opening the chest, the heart appeared intact and divided in the natural way. The lungs, on the contrary, were completely in decay: the external portion was almost completely sprinkled with scattered yellow, white, reddish, greenish and blue spots, and these colors appeared pathological. The internal part (of the lungs) did not show these spots, but was colored in dark red, almost black" (11).

From the anatomo-pathological point of view, the description is very accurate and allows a retrospective clinical picture, starting from several details. The body of Francesco had a scarce muscular mass and a large quantity of fat. Even though the condition of the organs were heavily compromised by hypostasis and cadaveric decomposition (as it happened for the stomach and for the spleen), the liver seems affected by hepatic fibrosis while the lungs of the Grand Duke showed acute inflammatory pleuritis.

Examination of the skeletal remains of Francesco showed that craniotomy was not practiced, whereas a cut in the sternum demonstrates the sternotomy. In the modern practice of the adult autopsies this procedure is no longer performed because it is preferable the thoracotomy method, that is the removal of the chest wall by inserting the costotome into the chest at the lower edge of the rib cage and then cutting across the musculature and cartilagineous tissues along the lateral face of the chest and towards the manubrioclavicular junction (17). This allows avoiding cutting on the hard bone and therefore operating on the soft cartilage that is easily dissectable.

Discussion

In Antiquity, the autopsy performed on human bodies is a practice attested very rarely. The father of ancient medicine, Hippocrates, did not dissected human corpses; the only exception is represented by the Alexandrian physicians Erasistratus and Herophilus, who in the Hellenistic times performed autopsies for their studies on anatomy and physiology. After them, this practice was abandoned, and the anatomical studies of Galen (2nd century AD) were based only on dissections of animals (18). Dissection for anatomical studies and teaching reappeared in the Western world with the work of Mondino de' Liuzzi (ca.1270-1326) in Bologna who, in 1315, performed his first public dissection in the presence of medical students and other spectators. From this moment, dissections were incorporated into the medical curriculum in the universities. The autopsy practice of Mondino followed a precise procedure, which he described in his fundamental *Anathomia*, intended as a practical "manual" that remained the reference text until the 16th century. The dissection was based on the division of the human body in three distinct parts: the head, the chest and the abdomen. The abdomen had to be opened first, because it contains the less noble and more putrescible organs; then you had to go to the chest, leaving to last the head, which contains higher and more complex anatomical structures. The abdominal cavity was opened through an incision practiced from the epigastrium to the pubis, while the description of the procedure to dissect the skull is less detailed and suggests a practice still rudimentary (19).

However, anatomical dissections should be distinguished from autopsies performed for medico-legal purposes. Sporadic cases of "forensic" autopsies on human bodies in the Western world are recorded starting from the Middle Ages. Roger Bacon (1214?-1294) and Arnold of Villanova (1235-1312) recommended the study of the dead body but did not mention any personal experience. The first recorded case in Italy of a human body being opened for inspection dates from 1286 in Cremona, when an epidemic among humans and hens occurred. The chronicles of Fra Salimbene, a Franciscan friar, refers that a physician, after having opened a hen and found an abscess at the tip of the heart, opened a man who had died apparently of the same disease and found a similar lesion (20, 21). Another significant case occurred in 1302 in Bologna, when Azzolino degli Onesti was open by a commission of two physicians and two surgeons, among whom there was Bartolomeo da Varignana, following the request of the judge, in order to rule out a poisoning as cause of death (22). Therefore, at the beginning of the 14th century in Bologna the practice of autopsy to determine the cause of death was framed in a forensic context; in fact a team of respected doctors was appointed in order to judge in cases of suspected murder, in particular poisoning, initially through external inspection, and then through opening the body (23). The practice of autopsy for assessment of the causes of death at the beginning of the 14th century paved the way to the anatomical demonstrations on the cadavers for didactic purposes. The example of Bologna was followed by several other cities and, in the course of the 14th century, the practice of autopsy became increasingly common. As an example, at the appraisal of the terrible epidemic of Black Death of 1348 the communes of Florence and Perugia paid doctors to open the bodies of several people who had succumbed to the disease (23).

As for the city of Florence, the anatomical dissection was regulated by precise rules contained in the Statuti of 1387 (24). Already in 1399, the autopsy practice is mentioned in the *Tractatus de nobilitate legume et medicinae,* composed by Coluccio Salutati, Florentine secretary and humanist (25).

If such cases are relatively infrequent in the 14th century, in the 15th century evidences of dissections performed by doctors on their private patients emerge. These dissections were requested by those families who can afford the expenses, in order to investigate the possible presence of hereditary diseases and to predispose a possible prevention and cure. Among others, we refer two evidences for the city of Florence. In 1486, Bartolomea Rinieri died and her husband writes in his *Ricordanza*: "Early in the morning my wife Bartolomea died at the age of 42 or thereabouts. She died of uterine disease; this caused a flux which had lasted about 18 months and which no doctors could cure. She asked me to have her autopsied so that our daughter or others could be treated. I had this done, and it was found that her uterus was so calcified that it could not be cut with a razor" (23). Similarly, a Florentine judge

asked to the physician Bernardo Torni to autopsy his young son: "… for the sake of the other children, I think that to have seen his internal organs will be of the greatest utility" (23).

The diffusion of this practice in Florence is attested also by the work of Antonio Benivieni (1443-1502), who is considered the father of the pathological anatomy. His *De abditis nonnullis ac mirandis morborum et sanationum causis*, published posthumous in 1507, illustrates a series of cases in which autopsy is fundamental in order to discover the causes of death or to study the anatomical and physiological changes determined by diseases. Benivieni correlated the symptoms of the patients with the alterations of the organs. This text demonstrates the diffusion of the autopsy practice in Florence during the 15th century (25).

There were still strong religious and social objections to the autopsy, but slowly the point of view started to change, also for the church. In 1410, Antipope Alexander V died suddenly with suspicion of venom and was autopsied by Pietro D'Argelata. He performed the autopsy, and then reported, in an accurate description, how he had found no suspicious sign in the corpse. Finally, he handled the embalming according to the principles contained in his work *De custodia corporis mortui* (Trat. XIII-lib. V). Pope Sixtus IV (1471-1484) in 1482 issued a bill permitting studies on human bodies by students at Bologna and Padua (26), and Clement VII (1523-1534) confirmed this privilege. In 1556 Ignatius Loyola, founder of the Jesuit order, was autopsied. Stones were found in the kidneys, bladder, and gallbladder (27). It therefore appears that by this time autopsy was fully accepted also by the Catholic Church.

It should be remembered also Leonardo da Vinci (1452-1519), who carried out autopsies on a limited number of corpses in the first decade of the 16th century in S. Maria Nuova Hospital of Florence; nevertheless, they were not practiced for anatomo-pathological purposes, but for his curiosity toward the human body (25).

Finally, in 1543 Andreas Vesalius published his fundamental *De humani corporis fabrica* (1543) brought considerable contributions to science, for example made it possible to distinguish the abnormal from the normal anatomy and began the criticism toward the Galen authority, demonstrating several errors in his anatomy.

It is difficult to reconstruct the procedures followed by the physicians, as detailed written accounts are rare before the 15th century. The description of the surgeons is generally conditioned by their knowledge of human anatomy and by the prevailing theories of their time. Firstly, the only macroscopic observation could not perceive what is visible with modern instruments, in particular the microscope, and secondly, the physician saw what he expected to find, according to his conceptual background. The degree of accuracy of the reports greatly varies from one case to another: often the dissection ceased as soon as the pathologist thought to have found the cause of death; however, sometimes the physician described the state of the main internal organs in a more systematic approach (27).

In general, the evidences registered at autopsy represented a category undetermined or very imprecise. The attention was concentrated on elements such as the presence of a corruption, fluids unusual or in excess or changed in colours, in accordance of the Hippocratic humoral theory still prevailing. However, a noteworthy problem was represented by the difficulty in distinguishing the changes referable to the *post-mortem* processes of putrefaction from the pathological lesions (1).

The autopsy records reported for the members of the Medici family during the 16th century reflect this framework. Explicit references to a medico-legal purpose of the autopsies in order to investigate the causes of death in the documentary sources can be inferred in the case of Cosimo I and Don Filippino. Furthermore, another reference is reported in a letter of June 9, 1547 when the courtier Don Pedro de Toledo brings Cosimo I and Eleonora the news of the death of their son Pedricco (August 7, 1546 – June 9, 1547). Cosimo orders an autopsy of the child's body: "He [Cosimo] ordered that the beautiful little corpse were opened so that they could see how it was inside" (28).

As for the 'progenitors' of the Grand Ducal line, namely Giovanni dalle Bande Nere and Maria Salviati, we do not have any necropsy reports. For the condottiero Giovanni, figure of great importance, we have no signs of autopsy on the skeleton and it seems that no investigation has been carried out even though he died

for wounds in battle. For his wife Maria instead we have news of her embalming, but nothing is narrated of the technique or what is examined or studied on her body. This fact betrays the little sensibility and attention on the autopsy studies in the first half of the 16th century. The bodies of the nobles of the Medici family were treated with great regard and care, so that the corpse would not undergo decomposition and could be exposed, for example, during the sumptuous burial. However, this attention did not turn into a scientific interest; in fact, the study of the organs was totally ignored.

Some autopsy reports of the first Grand-ducal generation constituted by Cosimo I, his wife Eleonora of Toledo and their children have been handed down, but still show certain superficiality and inaccuracy. The descriptions in fact are very sparse, dismissive and incomplete. It seems that the doctors did not perform the autopsy according to a pre-established methodology, and they wrote down only what struck them most. The most detailed descriptions are oriented to the quantifications of liquids, or humors, which betrays what the medicine of the time was still anchored to the theories of Hippocrates and Galen.

The situation changes with the next generation, in fact the report of the investigation on the body of Francesco I is clearly distinguished from the previous as length, precision and meticulousness. According to the dictates of Mondino de' Liuzzi, the corpse is dissected first at abdominal level and then to the thorax. All the organs are analyzed, the parenchymas are cut and the contents of structures like the kidneys and the gallbladder are investigated. The autopsy on Giovanna of Austria was performed with the same precision, and the doctors correctly identified the rupture of the uterus as the final cause of death. It is from this period that we have the first description of an autopsy performed on a child, Don Filippino (5 years old), who is treated as an adult corpse. It is also the first description of a complete investigation of the skull, with a precise examination of the meninges and the brain.

Conclusions

The analysis of the archival documents of the Medici family permitted to infer relevant information about the autopsy practices performed on the bodies of aristocratic personages of the 16th century. An evolution through this century can be appreciated, as from the first evidences consisting in very brief reports the relations became with time more accurate and detailed with correct considerations about the causes of death and even the description of an autopsy carried out on the corpse of a child.

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Medicina Historica 2019; Vol. 3, N. 1: 39-45 © Mattioli 1885

Paleopathological analysis of a probable case of Jarcho-Levin syndrome from the 18th century Northern Italy

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Abstract. This case report examines the differential diagnosis of an unusually fused chest belonging to a perinatal human remain retrieved in the crypt of Roccapelago (Italy). This specimen, which dated back to the final 18th century, showed a severe synostosis of the costovertebral articulations and posterior arches. The specimen was examined macroscopically and radiologically for the purpose of identify differences in mineral density. It also underwent computed tomography scan in order to create a 3D digital model and virtually reposition in anatomical position. The radiological trophism, size, and osteological maturity of the specimen are compatible with a perinate. The chest structure shows a characteristic crab like morphology, with the costovertebral articulations and some posterior arches completely fused. Accordingly, a diagnosis of Jarcho-Levin Syndrome has been suggested. This case appears to be the first report, to the knowledge of the authors, of a probable Jarcho-Levin syndrome, which dated before Jarcho and Levin codified this pathology in the scientific literature.

Key words: spondylocostal dysplasia syndrome, Jarcho-Levin syndrome, paleopathology

Introduction

Jarcho-Levin Syndrome is an autosomal-recessive disorder characterized by multiple vertebral and costal anomalies presenting at different levels of the vertebral column. This syndrome was first described by Saul Jarcho and Paul M. Levin in 1938 (1), when they studied the case of two Puerto Rican siblings affected by a shortened trunk, abnormal vertebral segmentation and irregularly aligned ribs. Since then, this pathology was named after its discoverers, and this term has been used for a variety of clinical cases showing chest anomalies (2). More recently, this nosological entity has been divided in two sub-categories, which have different survival rates, anomalies and inheritance mode (3):

- spondylocostal dysplasia (SCD) is characterized by the presence of a "crab-like" or "fan-like" rib pattern, due to the decrease in number of the ribs, and to their posterior fusion. It has a high mortality rate and its exact prevalence is unknown;
- spondylothoracic dysplasia (STD) is not characterized by the presence of the "crab-like" rib configuration; instead, it shows an abnormal orientation of the ribs with irregularities in shape and size, bifurcation, broadening and fusion. The survival rate is higher than in SCD (about 50%); its affecting approximately one in 12,000 people (4).

Up to now, numerous cases of Jarcho-Levin Syndrome have been reported in the medical literature

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(4–6) but, to the best of our knowledge, there are no published palaeopathological findings of this condition (7) .

Here we present what could be the first case report which dates back to the 18th century.

Historical and archaeological context

During the excavation campaign into the Church of the Conversion of San Paul, in Roccapelago (Modena, Northern Italy) (Fig. 1), a hidden crypt which contained a large skeletal assemblage was discovered. The archaeological excavation was conducted between 2009 and 2011 (8), and yielded the remains of more than 400 individuals. This crypt was used as a cemetery by the inhabitants of the small village of Roccapelago between the 16th and the 18th centuries. This large amount of human remains mostly consisted of commingled and completely skeletonized human remains, with a few corpses, especially among the most recent SU (i.e. SU23), that have undergone a different process of decomposition. In fact, thanks to the presence of two small windows that contributed to maintain the environment dry and ventilated (9), some partially mummified remains, still in anatomical connection, were retrieved. The study of the textiles suggested that the bodies were dressed in tunics and socks, and were wrapped in shrouds. The age range of this skeletal assemblage is very wide, as hundreds of non-adults skeletal remains were also retrieved (9, 10).

Here, we study a probable case of Jarcho-Levin Syndrome in a perinate retrieved from the crypt of Roccapelago (Modena, Italy).

Materials and Methods

The subject of this study is a perinatal partially fused chest (RP34). These remains were retrieved from SU34, dated to the final 18th century based on stratigraphy and archaeological findings (11-14). All the skeletons of SU34 were disarticulated, preventing the association of single bone elements to single infants; for this reason, it was not possible to retrieve additional bone elements that could safely be attributed to RP34. SU34 is placed on the south side of the crypt, which was indicated in the parish records as "grave of the angels" (15).

RP34 was examined macroscopically and subjected to radiological analysis to identify differences in mineral density. Then, the specimen underwent computed tomography scan at the department of Radiology of the GB Morgagni-Pierantoni city Hospital

Figure 1. On the left, the white dot is the position of the Church of the Conversion of San Paul in north of Italy (Roccapelago, Modena district); on the right, the church.

in Forlì. The parameters of acquisition included: 1.25 slice thickness, with an interval of reconstruction of 0.7 mm; 120 kV and 140-300 mA. Radiological images of the chest were taken in anterior view (Fig. 2a). Additionally, the computed tomography image data were segmented using Avizo Lite 9.2.0 software (Visualization Sciences Group Inc.) to generate 3D digital surfaces. The 3D digital models were imported into Geomagic Design X (3D Systems, Rock Hill, South Carolina, USA), post-processed (i.e., cleaning processes and correction of defects to create fully closed surfaces), and virtually repositioned in anatomical position. The post-processing of radiological images was performed at the Laboratory of Anthropology and Ancient DNA of the Department of Cultural Heritage of Ravenna University of Bologna.

Results

The right hemithorax, consisting of nine ribs, shows the costovertebral articulations and the posterior arches affected by a severe synostosis, while the third and the fourth ribs appear fused for their entire length (Fig. 2b). The morphology of the archway is altered with the ribs that fanning out in a crab-like morphology, as highlighted by the 3D digital model (Fig. 3 a, b, c, d). The posterior arches of the first two ribs are fused with what seems to be the transverse process of a thoracic vertebrae (Fig. 4); The left chest is represented by six ribs divided into two groups; the first one consists of four ribs with synostotic costovertebral articulations, with the synostosis of part of the posterior arch of the third and fourth ribs from above the second group consists of two ribs with synostosis only of the costovertebral joint processes (Fig. 3 c, d). These ribs also show the characteristic crab-like morphology (Fig. 3 a, b). Radiological trophism and size are compatible with a newborn.

Discussion and Conclusions

Differential diagnosis

The differential diagnosis of similar spinal and ribs disorganization in a fetus includes several diseases that often affect both the skeletal system and the soft tissues. The differential diagnosis applied to RP34, exclusively takes into account the morphology of the chest, ribs and degree of dysplasia, which can be estimated on recovered bone remains (Table 1). Due to the shortage of osteological material and the typology of deposition, genetic analysis was excluded a priori. We also evaluated the advantages and disadvantages of a paleogenetic analysis but, RP34 is essentially constituted by spongy bones, that usually contain scarce amount of endogenous DNA respect to petrous bones or teeth (16, 17). The marker targeted by this study should also be the nuclear DNA, usually present in few cop-

Figure 2. On the left (A), Radiological images, anterior view, of the chest. On the right (B), photo of the same view.

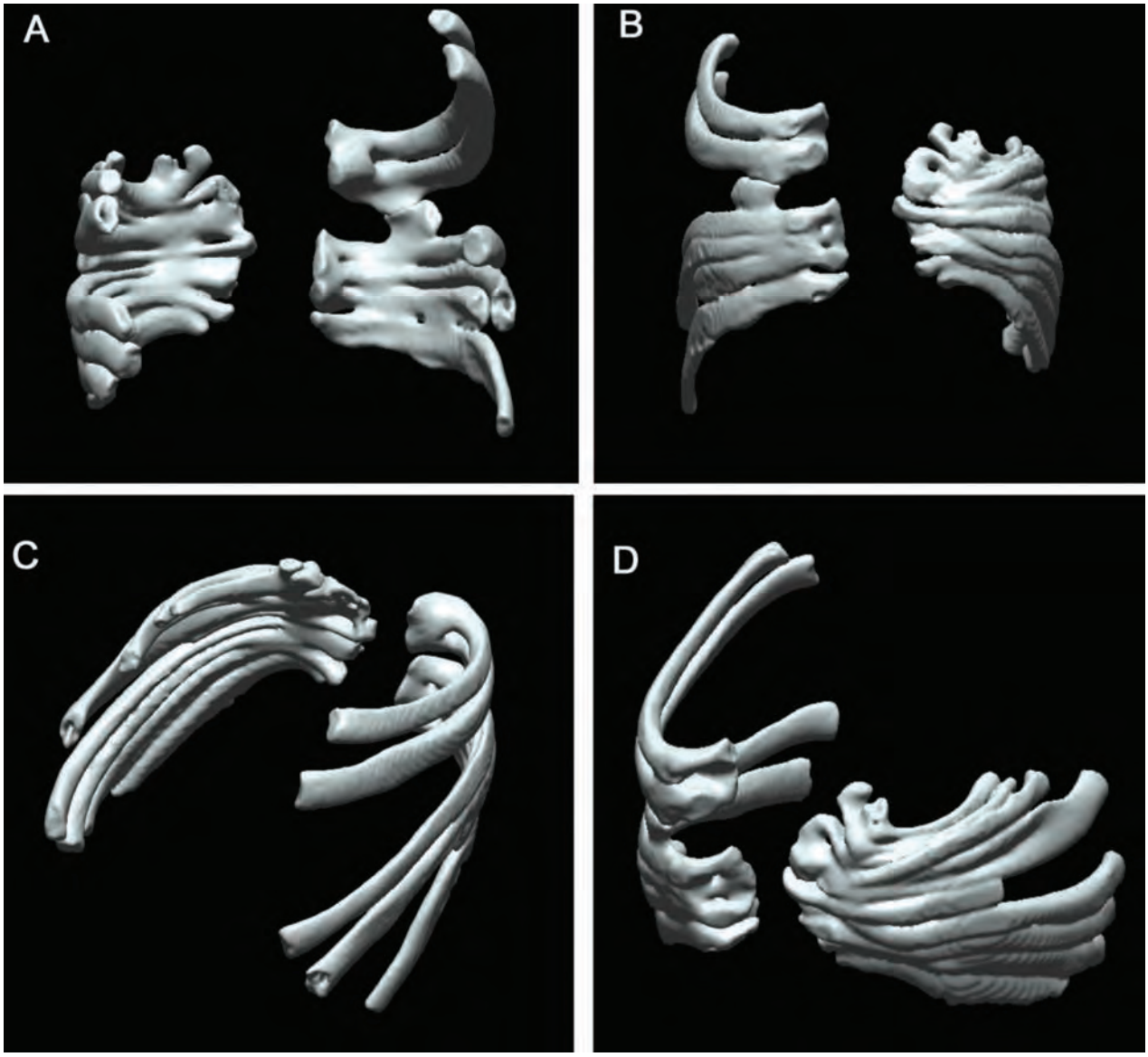

Figure 3. 3D digital model: A anterior view of the chest; B posterior view; C anatomical vision of the typical crab-like morphology, anterior view; D synostosis of the ribs of the right hemithorax.

ies respect to mitochondrial DNA (18, 19). For these circumstances the molecular approach, on the case of RP34, was not the first diagnostic line, therefore this analysis was excluded.

Differential diagnosis for an archeoanthropological case of Jarcho-Levine syndrome, is to be associated with those pathologies that are mainly characterized by severe skeletal disorders. Below are discussed the disorders considered for differential diagnosis:

- Dyssegmental dysplasia is characterized by severe micromelia, with extreme shortening of all segments of the extremities and occipital cephalocele, narrow chest with no ribs fusion. Crab-like appearance of the chest is lacking. Three variants are known: the Rolland-Desbuquois type, Silverman-Handmaker type and glaucoma syndrome. RP34 has a crab like chest, with fusion of numerous ribs, it is therefore quite dis-

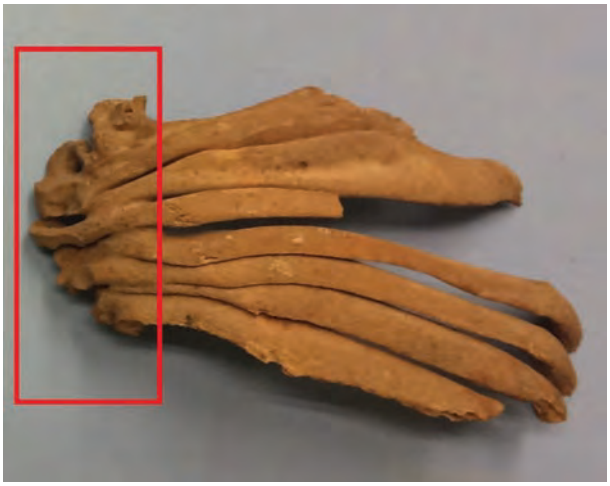

Figure 4. Right hemithorax, external view. The red rectangle highlights the synostosis of part of the posterior transverse process of the thoracic vertebrae with ribs.

tinct from the morphology observed in Dyssegmental dysplasia (20).

- Spondylo-epiphyseal dysplasia is a chondrodysplasia characterized by disproportionate short stature (short trunk), abnormal epiphyses, flattened vertebral bodies and short ribs. Skeletal features are manifested at birth and evolve with time. The presence of fused ribs and of average physiological length on RP34, associated with the crablike chest, does not find similarities with Spondylo-epiphyseal dysplasia (21).
- Vacterl syndrome is an acronym that describes a non-random constellation of congenital anomalies. The acronym derives from V (vertebral anomalies, hemivertebrae, congenital scoliosis, caudal regression, spina bifida), A (anorectal anomalies, anal atresia), C (cardiac anomalies, cleft lip), TE (tracheo-oesophageal fistula +/- oesophageal atresia), R (renal anomalies, radial ray anomalies), L (limb anomalies, polydactyly, oligodactyly). Vacterl syndrome does not appear with crab-like chest, and the fusion of ribs, though rare, is always limited to a few ribs. RP34 has a typical crablike chest, with at least fifteen fused and dysplastic ribs; the greatest severity and extent, associated with the crab-like chest, differ from the clinical picture of the Vacterl syndrome (22).
- Robinow syndrome is characterized by dysmorphic features like mesomelic limb shortening, hypoplastic external *genitalia* in males, and renal and vertebral anomalies. Patients may exhibit abnormal depression of the bone forming the center of the chest with a "funnel chest" morphology, or *pectus excavatum*, fusion and/or absence of certain ribs is also possible, although very rarely the defect extends to the entire chest. The abnormality of RP34, so extensive and characteristic in the crablike chest morphology, tends to exclude Robinow syndrome (23).
- Casamassima syndrome is a spondylothoracic dysplasia, similar to the costovertebral dysplasia and the Jarcho-Levin syndrome. The thorax has a crab-like configuration with fused ribs. The association of anal atresia, single umbilical artery, and urogenital anomalies suggested that this is a distinct entity compared to the Jarcho-Levin syndrome. Since it is not possible to evaluate the urogenital apparatus of RP34, Casamassima syndrome can not be excluded, in spite of the extreme rarity of the pathology (24).
- Poland syndrome is a congenital unilateral ab-

Table 1. Evaluated items for differential diagnosis

	Crab-like chest	Rib fusion	Short rib	Widespread chest anomaly
Jarcho-Levin Syndrome	yes	yes	no	yes
Dyssegmental dysplasia	no	no	no	yes
Spondylo-epiphyseal dysplasia	no	no	yes	yes
Vacterl syndrome	no	yes	possible	yes
Robinow syndrome	no	yes	no	no
Casamassima syndrome	yes	yes	no	Yes
Poland syndrome	no	no	yes	no
RP34	yes	yes	no	yes

sence of the pectoralis major and minor muscles, with unilateral chest wall hypoplasia, short ribs and hand modifications. The abnormality of RP34, bilateral and characterized by crablike chest morphology, without particular hypoplasia of the ribs, exclude Poland syndrome (25).

- Jarcho-Levine syndrome is a genetic birth defect which causes malformed bones in the vertebrae and ribs. Patients with Jarcho-Levin syndrome have short necks with limited movement, short stature and difficulty breathing, due to small, malformed chests that have a distinctive crab-like appearance with fused ribs. The alterations of RP34, due to morphological characteristics, is very similar to Jarcho-Levine syndrome with its very evident crab-like chest and fused but normal-sized ribs.

In the light of the severe degree of morphological compromise of the chest, which probably resulted in immediate death at moments after childbirth, except for Jarcho-Levine syndrome, the other diagnostic hypotheses are likely to be excluded, presenting them all in more benign forms; Casamassima syndrome is not completely excluded, it is associated with urogenital malformations, which can not be investigated on our case.

The severe deformity and the almost total lack of elasticity of the chest have probably resulted in death due to respiratory failure. Jarcho-Levin syndrome commonly leads to respiratory insufficiency and death during the first years of life, usually by 15 months of age. The severe form of Jarcho-Levin syndrome, as probably the case under study (SCD type), is considered a uniformly lethal condition. RP34, as far as the authors know, appears to be the first case of Jarcho-Levin syndrome on ancient cases, and the oldest documented case of this disease, dated before the Authors codified it in the scientific literature.

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Medicina Historica 2019; Vol. 3, N. 1: 46-47 © Mattioli 1885

Bioarcheology in northwest Italy. Our experience

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Abstract. In this letter we report our experience in the bioarchaeological field during the last 10 years. We would like to focus the attention on the importance of interdisciplinary approach, in order to better comprehend archaeological record and the history of our territory.

Key words: bioarchaeology, northwest Italy, Varese, anthropology, archaeology

Our research centre deals mainly with the study of ancient populations through anthropological and paleopathological analysis of human remains and it promotes archaeological and anthropological investigations in collaboration with the Ministry of Culture, archaeological superintendence, museums and other public and private entities following the same objectives. This is done by adopting interdisciplinary, purposeful and dynamic approaches.

Interdisciplinary because the anthropological study of human remains takes place during the archaeological excavation. In fact, laboratories of physical anthropology are set up directly on the archaeological site. The team of our centre analyses the bone remains in *situ*, in this way preventing the loss of important information. On one side, the anthropological investigation allows us to reconstruct the ancient demographics, highlighting the average life expectancy for reference periods, the stature of men and women, the morphological features that allow us to define the physical appearance of people, the presence of certain pathologies, the diet consumed and the physical stresses possibly associated with the working conditions of the time (1-3). On the other side, we have funerary archaeological investigations that bring to light sepulchral contexts, documenting the period, classifying funerary finds, where the main objective is a reconstruction of the burial ritual. The reconstruction of the archaeological context combined with the description of the biological profile of the individual, therefore the entire sample-community, allows us to better investigate and reconstruct the history of the populations and the way of life but also the way of dying, also thanks to the radiological analysis. This strong interdisciplinary feature allows us to develop new interpretations of the history of the territories, especially those who in the past represented peripheral centers and now, thanks to these research operations, may fall within the context of minor archaeology and promote tourism in these places (4).

Purposeful because our centre of research proposes research projects in the Cultural Heritage field, in particular initiatives aimed at the recovery, development and enhancement of the archaeological heritage of the province. Today, it is necessary to consider that the field of necropolis excavation is almost totally of an "emergency archaeology" which intervenes on building sites when there is an occasion of ancient sepulchres becoming known. Normally, the investigation stops at the limit of available funding, to the point that there are interrupted excavations and consequently there are incomplete anthropological researches. Consequently, this represents a persistent problem that derives from the fact that the archaeological investigations today, for the most part, take the form of safeguard interventions, where construction work unexpectedly reveal finds or sites that require protection. Therefore, the excavations almost never assume systematic characteristics of taking steps towards the diachronic reconstruction of a site, there just simple survey operations dictated by contingencies. Therefore, we claim

the importance of recovering and intervening in those unexplored areas with the aim of obtaining a satisfied anthropological analysis and giving a complete view of the site. Our goal is therefore to resume archaeological and anthropological investigations in the past that have been interrupted, or those cemeteries that have not been fully excavated. Our latest studies conducted on the sites of Azzio (5), Cittiglio (6) and Caravate (7) are full demonstrations.

Dynamic because when the archaeological site is operating (archaeological investigations and anthropological in situ), it is transformed. It sees the presence of professionals, university trainees, but also high school students in the context of schoolwork alternation projects. The site becomes a place of learning where practice and teaching activities are interspersed.

At this moment, archaeological sites have reacquired more "site-museum" value. Perception, of historical things, reaches the maximum level of communication, fruition and valorisation. In this way, dynamic archaeological sites are created with the active involvement of students and the local population and where possible have a display of visiting areas with the reconstructed osteoarcheological findings. This is the empathic account of the archaeological and biological history of the site population, of individuals and of the cemetery population as a whole. The work experience we are building will allow us to make a comparative analysis of the sites both from the archaeological and anthropological point of view.

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Medicina Historica 2019; Vol. 3, N. 1: 48-51 © Mattioli 1885

Empathizing. A sharing of life

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Abstract. Nobody ignores the importance of proper communication with the patient so that it can be considered an integral part of it and maybe the very beginning of the cure. However not everyone considers how difficult is it to handle this. Our paper focuses on the fact that the doctor's contribution is not to let the truth come to light "tout court", taking priority above everything, but only to provide the biographical mosaic with some pieces that the patient can recognize as true and useful. When illness and death are not just words, but already quite near us, self-knowledge is the only thing that makes life alive forever. You cannot pass through the disease without changing. Not always and not necessarily this is for the better, but often it brings awareness.

Key words: medical humanities, empathy, care

Introduction

In the myth of Pandora, it is said that the Gods had a beautiful female figure modeled by Hephaestus, called Pandora, to whom each of the Gods gave an attribute. But they did so to punish the titan Prometheus, who had taken fire away from them to give it to men. In fact, beautifully dressed, Pandora was sent to the brother of Prometheus, Epimetheus who, seduced, accepted the gift despite the brother's recommendation not to receive anything from the Gods, for fear that it would result a misfortune to mortals.

The Gods had given Pandora as a wedding present a beautiful box in which they had concealed all the evils that can plague the mankind, with the recommendation not to open it. Pandora, driven by curiosity, as soon as she could, lifted the lid, bringing out diseases, loneliness, suffering, old age and death, which suddenly spread throughout the world.

Since then, according to the story of Hesiod, diseases "roam innumerable among men and they visit them spontaneously, some by day, others by night, bringing suffering to mortals". Only hope, Elpis, remained a prisoner in the box, which Pandora closed up quickly. And only hope, at the behest of Zeus, remains to console mortals.

Science and wisdom in the doctor-patient relationship

The encounter between doctor and patient is one of the most important elements in defining the nature of medicine itself, and in fact, the goal of medicine is to be therapeutic.

The ability to decide and act correctly in well-defined situations corresponds to the Aristotelian *phronesis*, later translated into the terms of *consilium* and *prudentia* by the scholastic theologians of the Middle Ages.

Taking into account the possible models, the structure-type of a *consilium* consists of different sections. The first one takes into consideration a present, actual situation: the patient is described by name and surname, age, sex, social position, activity, followed by the description of the disease he/she suffers from and the identification of some causes. This preliminary section is followed by an indication of a diet and the prescription of drugs to be observed by the patient.

If, as some (1) thinks, this was the true status of clinical medicine, it would not differ too much from the social, political or economic sciences. If therefore it is not easy to draw clear boundaries between different conceptions and schools of thought, it is perhaps useful to start from the origins and history of this idea.

In the sixth book of Nicomachean Ethics, Aristotle distinguishes among *sophia*, *phronesis* and *deinotes*. Aristotle claims that virtue and wisdom are closely joined together because choosing correctly is not possible without wisdom or without virtue. It is the virtue that determines the good, and wisdom enables us to carry out actions to achieve it. The evil person cannot be wise, because "wickedness makes us fall into error on practical principles. So it is clear that it is not possible to be wise without being good".

Wisdom is not science, neither art nor technique. It requires indeed experience and maturity. It is not oriented towards scientific knowledge but towards action (2). As an example of *phronesis*, Aristotle quotes that of Pericles, a true sage, "able to see what is good for himself and what is good for men in general".

A still different position is that which is inspired by cultural relativism and social constructivism. This is essentially the most widespread trend among the anthropologists of Medicine (3).

Cultural relativism, today very much represented also among humanists and sociologists, considers science only as an organized system of beliefs among the many possible, all substantially equivalent. This is because scientific truth would be nothing more than an instrument invented by the community of scientists to justify and perpetuate their hegemonic position in the study of nature.

The anthropological school of Harvard, which in the last twenty years has devoted much attention to the study of *illness narratives* (4), agreed with these positions and is characterized by close criticism towards biomedicine and its pretensions of a true scientific approach, positivist epistemology and to the empiricist tradition. These, at the center of the investigation, place the malfunctioning organs and functions rather than the individual, with his sensitivity and culture.

Anthropologists claim that Medicine is part of a cultural process and that the doctor, during the professional training, learns to see and speak "as a doctor". Cultural anthropologists (5) conceive science exclusively as a product of the society in which it develops and argue that scientific theories (medical ones in particular) are to a large extent socially determinated.

Taken to the extreme, this position pushes us to reject the existence of rationality and objective truth, even in the limits in which modern science defines them. According to the followers of cultural relativism, truth is always relative to a particular culture, and therefore Western science should not enjoy a higher status than for example that of the beliefs or practices of certain primitive societies such as the shamanic phenomenon. That is, for relativists, the various alternative belief systems are all equally valuable.

Today, in a contradictory way, the media tend to support both an uncritical faith in the progress of science and a low level relativism, publishing daily news of miraculous healings, extraordinary alternative treatments, and so on.

According to the theory of social constructivism, all forms of knowledge can be seen as stories that people tell each other for the most various reasons, including power relations. For constructivists, reality is a story, with which the various actors agree, even if temporarily.

A less extreme view instead of constructivism (6) does not reject the professional content of *ars medica*, but maintains that there is a sort of alliance between doctor and patient, which would express itself in the activity of exploring, creating and testing new narrative hypotheses, more convincing than precedents and with greater explanatory capacity.

The medical consultation, in which today the real dialogue with the patient lasts only for a few minutes, would become a possibility of dialogue among different stories: the biography that the patient tells and the story that the doctor collects with professional criteria.

The doctor›s contribution would not be to bring out the truth *tout court*, overriding and superior to everything, but only to provide some element to the biographical mosaic that the patient will recognize as true and useful (7, 8). In short, it would be possible to tell and hear stories about the disease. This narrative and biographical personalization could give unity and consistency to the understanding of the patient's problems and encourage the professionals to humility,

without however depriving the doctor of his professional abilities, also because it is to these that the patient addresses.

Constructivists also admit that there are situations in which it is really difficult or impossible to resort to a narrative clinical interview and in which the biological paradigm clearly prevails - think about a severe trauma or an aortic dissection, for example. However a reasonable integration of the two dimensions is always desirable, especially in the psychiatric field. An example would be the integration of genetic and biochemical knowledge in the assessment of the personal and family context of a psychotic patient.

No one ignores the importance of correct communication with the patient, to the point that it can be considered an integral part and perhaps the true beginning of treatment. However, not all reflect on how difficult is it to manage, because the problems related to health can always be interpreted differently, on the basis of cultural value systems and backgrounds: these could be very distant from each other, often creating serious communication difficulties (9).

The relational asymmetry is already entirely contained in the etymology of words: doctor (from *docére*, to teach) and patient (from *pati*, to suffer). Pain and illness are events that involve the whole person in a totalizing, emotional, cultural as well as physical experience that upsets the subject's life and often irreparably change the vision of the world. Difficulties in communications can be at any level of clinical narration, because communicating is not just a sharing of ideas and emotions, but a two-way and dynamic flow, through which individuals establish and feed a relationship. It is really the essence of the relationship among people.

In this sense, it cannot be denied that the relationship between the patient and health professionals has been in crisis, the more scientific and technological the Medicine becomes. Some authors (10) have proposed, through the transcription of authentic clinical interviews, an in-depth analysis of the discourse in medical practice, such as to include also the tense of verbs, pauses, silences, metaphors, moments of emphasis or uncertainty and the use of meta-communication.

According to the school of Palo Alto, meta-communication means that communication which has as its object the communication itself *Meta-comunicare* means providing a point of reference to communication. The meta-communications, not necessarily verbal, are messages that give information on how another message should be interpreted, giving a frame of reference to the communicative situation.

All these tools can give us information on how doctor and patient construct and interpret their role, interact, know how to listen, capture emotions and thoughts, and hopefully find a common ground of understanding, going beyond the most superficial level of communication, in order to be able to listen and express themselves constructively.

From here to being sent back to the narrative structure of knowledge, the step is short. Together with the patient, through an appropriate communication, the doctor, without relinquish the sound scientific foundation of the medical practice, can become co-author of new stories that have an open ending, interacting with the patient to produce meaning and transformation, to resume weaving together the great tapestry of life (11, 12).

Wisdom in medicine has several important components among which reflectiveness shows up more than other. There is a cognitive dimension to empathy that allows a person to understand the object of empathy and, given a specific set of conditions, the task of a wise doctor is to foresee which course of action is best or good (13, 14). So the physician can explain diseases with respect to the general knowledge available through the biomedical sciences, while the patient explains it in order to negotiate a treatment plan, in light of what is best for him in terms of values and needs.

Conclusion

The expression "to fall ill" represents an effective image to describe the condition in which one finds out who loses physical health. The disease, by removing the forces and the energy from the body, makes one experience the loss of autonomy and freedom, falling precisely in the impossibility of doing.

St. Francesco of Assisi, in many of his texts, talks about the disease by comparing it to a fall and it is very interesting to note that, in the first Rule, dated 1221, as first aspect faces not the sick friar, but those who are

called to share this limit in the name of love. In this case love is not easily defined, and perhaps self-sacrificing love completes where this state of feeling led to a complex emotional attitude towards another human being. Compassionate love is not religious love: it only describes service of the other person, but the roots of compassion are in our shared humanity. This act can better the condition of the other, placing the other's needs in high priority.

If in poetry we find the point of reference in Emily Dickinson that talks about human nature and the experiences that determine it - the *Bildung* of a human being -, in literature the text *par excellence* is "The death of Ivan Il'iĉ" written by Tolstoy.

Tolstoy's writing is that of universal feelings and various degrees of sensitivity that human beings have. The smell of fear, which strikes with tremendous force and goes on for a time that never seems to end, then slides towards the color of compassion, which changes according to its mix with sadness or calm inevitability. Here death, reached with unexpected solitude, has a dull sound. Described with lucid dramatic irony, it can be interpreted and become a space of rebellion.

When illness and death are not just words, but are now a music that echoes close, self-knowledge is the only thing that makes alive forever an existence that is extinguishing, because it has lived and is legitimized.

Every day we live the experience of the limit, but we struggle to ask for the help. It is easy to feel guilty when we are in the need, but the pain may become less heavy if we can see in the other not only tiredness, but also the joy of caring. In fact the suffering of the body and the pain find a sense, and a relief, only when they are understood and shared. A physician so moved can experience and understand the suffering, the associated fears, the anxiety, the vulnerability, reflected in loss of freedom.

Many, like Ivan Il'iĉ, hide themselves from love, flee from life and when they find themselves dealing with a disabling illness that could lead to death, only the fortunate can understand the real importance of every decision taken in life. They are lucky because reaching finally the awareness of self, leads to overcoming and not to the regret: actually at this point one is beyond and relies on the immensity as a cork on the current.

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Medicina Historica 2019; Vol. 3, N. 1: 52-57 © Mattioli 1885

Therapeutic choices and care of minors: a recent story

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Abstract. The profound social, ethical and juridical transformations that have invested the condition of childhood have also affected the consideration of the existential interests of the minor in the care relationship and his role in the adoption of the therapeutic choices that concern him. If the history of children's rights is recent, that of children's rights in the health field is still at the outset. The legal status of the minor in the medical field expresses all the complexity of a *status* that, for a long time, has been subject to profound reconsiderations and which concerns various and different stages of growth and the formation of his personality. The participation of the child is an important factor to condition the therapeutic path and improve the curative results. However, the participation of the minor in his/her health path still has obstacles and shortcomings. The promotion of a specific communicative competence of health professionals can represent an important factor capable of contributing to the growing autonomy of the child and positively influencing the therapeutic path.

Key words: self-determination, healthcare, minor, child, autonomy, competence, paediatrics, decision making

The evolution of child protection

Minors have always been subject to violence, sometimes unprecedented violence (1). In all cultures and in all kinds of societies parents have beaten, exploited, abandoned, tortured and killed their newborn children. The female sex of the child, the lack of economic resources for his livelihood, the clandestine state of the relationship and disability were all valid reasons to support this practice. In a study on human cultures, the anthropologist Laila Williamson (2) reveals that infanticide was a widespread practice in almost all types of society (the number of suppressed babies fluctuated between 10 and 15%), and this is also evident in our humanistic repertoire that recounts the exploits of great personalities of history who all have in common the fact of having been abandoned children, exposed to the forces of the elements or destiny (Moses, Remus and Romulus, Cyrus the Great, Oedipus, Gilgamesh and so on). For a long time, childhood life had no specific recognition by adults who considered the "minor" (from the Latin *parvus - minor*: small/smaller, as being worth less; *infans-infantis*: who cannot speak) a being without rights, a subject to be educated and shaped.

Minors were juridically the property of the *pater familiae* who could impose every decision on them, in any field; the public authority could not violate the boundaries of the family, nor overlap or replace the authority of the father, not even to prevent violence, abuse of power or mistreatments. The first institutional intervention to protect abused minors took place in 1874, in the United States, in favour of the child Mary Ellen Mc Cormack, brutally beaten and abused by her family. In the absence of specific legal instruments, the minor's neighbours were forced to turn to a society for animal protection, as the only reference that could provide assistance to her. On the basis of the analogy between the vicissitudes of the child and those of the horses saved from the violence of the farmers, the founder of the company presented an application to the Supreme Court of the State of New York. Through a creative interpretation of the legal institution of the

Habeas corpus (an Anglo-Saxon legal institution of very ancient origin, aimed at protecting the citizen's personal freedom), the applicant thus obtained the first judicial hearing of a minor against his parents and a subsequent provision of protection. This trial was followed with great interest by public opinion and gave rise to a series of significant debates, which led to the birth in New York of the First society for the prevention of cruelty to children and, in Chicago (1899), of the first Juvenile Court in history. Also in England, the defence of minors was initially undertaken by animal protection associations (3).

From the first half of the 20th century, a different sensitivity towards the child has gradually promoted a profound transformation of his social role and has increasingly attracted the attention of states and supranational organizations towards the minor and the fundamental rights of which he is bearer, albeit with great initial ambivalences. In fact, still in 1911, an English doctor, Charles Mercier, presented some arguments to support the idea that infanticide had to be considered a less heinous crime than the murder of an older child or adult, writing:

"The mind of the victim is not sufficiently developed to allow her to suffer from the contemplation of the approach of suffering or death. She is incapable of feeling fear or terror. Nor is her consciousness sufficiently developed to allow her to feel the pain appreciably. Her loss leaves no void in the family circle, does not deprive any child of the breadwinner or mother, no human being of a friend, a helper or a companion" (4).

Evolution of the minor's rights and the right to health protection

The legislation on children's rights is, however, recent and closely linked to the progressive transformation of the family and the concomitant redefinition of the nature and social role of children (5). The first international organization to protect children was the Committee for Child Protection, established in 1919. However, the Declaration of the Rights of the Child signed by the League of Nations in 1924 (also known as the Geneva Declaration) represented the first significant attestation of the needs of children, which also established a precise and clear responsibility of adults towards them. The approval of this Declaration, in which Eglantyne Jebb (member of the Red Cross, who had founded Save the Children in 1919) participated, among others, is linked to the dramatic events related to World War I, that also called for the question of the protection of children and adolescents. The text of the Convention, deliberately brief and concise, has a system substantially based on welfare, aimed at affirming the material and affective needs of minors, considered not as holders, but only as passive recipients of rights.

With the subsequent birth of the United Nations Organization, the UN General Assembly approved, on November 20, 1959, the Universal Declaration of the Rights of the Child. The document, structured in 10 principles, considers the particular fragility of the child including a series of health related rights, not foreseen in the previous Universal Declaration of Human Rights, such as: the prohibition of children insertion into productive activities that may harm their health or hinder their physical or mental development and the right of the disabled child to receive special care. Although not a binding instrument, the Declaration assumed considerable moral authority, thanks to the unanimity of its approval and the innovativeness of its contents.

In the evolution of international child law, these international documents have undoubtedly been very important steps. However, in a world that recognized ever more complex spheres of human rights, the rights of the child continued to be lacking. As "human beings" in formation, the minors continued not to be holders of independent rights, but the object of care and protection.

Only in 1989, with the New York Convention, the child finally became the owner of subjective legal situations that required parents, the State and the international community to commit themselves concretely, with different levels of responsibility, to preparing a system that would realize his *superior interest*. In his regard, the parents continued to perform the traditional tasks of rearing, caring, education and supervision, but in compliance with his abilities, natural inclinations and aspirations.

The recognition of the subjectivity of the child and, together, the best interest of the child thus became

the guiding principles for any intervention activated to protect children. The recognition of the child's subjectivity has been expressed, in particular, in the provision of the fundamental right of the child to be heard and to express his opinion in any judicial or administrative procedure that concerns him.

Subsequent international documents have enhanced the role of the child in the information and decision-making process by progressively affirming a new image of the minor: one that sees him as, at least potentially, autonomous, competent, capable of self-determination and of freedom. According to these important international Acts the obligation to take into account the opinions of the child applies in cases where it is a "child capable of discernment" and also "in relation to his age and degree of maturity" (6).

Moreover, the protection of health also falls within the scope of these norms that therefore introduce the direct and unavoidable participation of the minor in the health treatments that concern him. The involvement of the minor in the information and decision-making process is, moreover, closely related to the careful evaluation of his ability to understand and self-determine himself in relation to the health pathways. In this perspective, listening to the minor plays a fundamental role of important ethical value. The implementation of a participatory health model also makes it possible to increase the child's adherence to the therapeutic path and favour the offer of appropriate health care according to the subjective, cultural and systemic perspectives and needs of the assisted children.

However, these documents do not indicate the benchmarks for assessing the capacity for understanding and self-determination, but merely suggest certain verifications and a broad assessment that includes a plurality of factors, such as age, personality characteristics, complexity of choices to be made and the values at stake. Actually, this assessment is left to the discretion of the professionals and to their training competence.

Several researches suggest that the formal operational stage begins at approximately age twelve and lasts into adulthood. As adolescents enter this stage, they develop the ability to think in a theoretical manner by manipulating ideas in their head, without any dependence on concrete manipulation (7, 8). However, the role of emotions in the development of decision-making processes must be taken into account. For centuries, passions and feelings have been considered sources of disturbance or even suppression of human rationality and freedom, while more recently, evidence deriving from the clinic and ethology has allowed us to understand how, contrary to what was believed in past, precisely the absence of adequate emotional indicators (for example due to brain injuries or particular mental disorders) can interfere with the ability to act and decide, even to the extent of making it impossible (9).

However, recent studies indicate that children are generally excluded and not sufficiently involved in individual healthcare decisions in many European countries (10,11). The scarce participation of minors in the communication and decision-making process of the therapeutic path is related to the lack of a specific formation of physicians and specialists working with children on how to communicate with them in a child-friendly and professional way, particularly in clinically difficult situations, building relationships of trust (12). Delegating this task to psychologists, social workers, nurses, and other workers risks further marginalizing the role of physicians in the creative process of mutual understanding and trust (13). Most European children often feel they are mere spectators of a process in which their participation is not at all solicited, but replaced by their parents (14,15).

Ehrich et al. (10) indicate that the success of medical treatment depends not only on the severity of the disease and the quality of care, but also on children's participation in therapeutic measures. In particular, external determination and attempts at autonomy influence the result both positively and negatively. The survey carried out in the context of the health research project of the European Paediatric Association (EPA) revealed that in 30 of 35 European countries, chronological age has been considered the only parameter for allowing children to participate in decision-making (10). Indeed, when we refer to acts of autonomy of minors relating to personal and existential interests, such as those relating to the exercise of the right to health, due consideration must be given to the complexity of situations that, from a subjective point of view, do not lend themselves to being framed only with the mere identification of an age threshold.

Recent study indicates that European adolescents, even though they have different preferences regarding health communication, all wish to be involved as partners (14). Coyne et al. (16) show that children with cancer generally prefer to be involved in decision-making and consider it important to have the opportunity to take part in decision-making concerning their health care, even in the case of end-of-life decisions. The enhancement of the communicative and participatory involvement of the child also constitutes one of the indispensable elements in the process of humanization of medicine that has its roots in the rigorous selection and full training of the new nurses for "sick children" (17,18).

The value of the minor's choices in the medical field between rights and over-treatment

The consideration of the issue of the self-determination of the child, with respect to health care choices, lies within that path that has, with difficulty, introduced the ethical principle of autonomy of the assisted person into the medical field. This principle, in fact, was initially extraneous to both medical tradition and practice, which were governed exclusively by the principle of beneficence (19), that required attention only to the "objective" good of the patient, judged presumptively incompetent to make appropriate health choices. The gradual affirmation of the principle of autonomy is connected to the introduction of surgical anaesthesia, in the second half of the 19th century, which raised important problems of informed consent. The application of surgical anaesthesia, in fact, allowed not only to avoid pain, but also to overcome the resistance of patients against operations. At the end of the 19th century, however, complaints from patients who considered themselves to be involuntary victims of surgery increased significantly. The absolute need for consent to the medical act was universally declared only by Nuremberg Code (1946).

In recent decades, the particular nature of the right to health protection and, above all, its very close connection to the body and to the freedom of the person have prompted the question of consent also with regard to underage patients, traditionally considered subject to their parents' will even for what concerns health treatments. Moreover, clinical practice highlights the difficulty of marking a clear demarcation between specific properties of a certain age compared to another, since maturity, competence, autonomy, responsibility, or their opposite (immaturity, incompetence, dependence, irresponsibility) are characteristics that no longer belong only to a certain age, but that characterize in a transversal way every phase of development.

In a perspective that considers the consent to the medical act the expression of a very personal right and that identifies conscious participation in care as an essential element for the success of the therapeutic project, there is also in this context a general rethinking of the condition of minors, and more generally of legally incapacitated subjects. From a purely evaluative, incapacitating and even exclusive logic of the person presumptively deemed unsuitable, international law is increasingly directed towards a dynamic and propulsive role aimed at including subjects, emphasizing and enhancing their capacities and abilities, rather than compressing and repressing them, also taking into account, on the one hand the emancipation of the child world, on the other hand the revisitation and reinterpretation of adult models.

On the basis of these premises it was excluded that parents could represent, in an exclusive way, children in relation to their medical choices, particularly when the child has reached an age close to the full capacity to act. The introduction into community framework of the concept of parental responsibility, rather than authority, better describes the commitment of adults to promote the progressive autonomy of children, based on their inclinations, capacities and interests.

The condition of "minor" contains, moreover, within it, heterogeneous situations that make it necessary to distinguish between:

a) the case in which the minor is a child and the case in which the minor is a preadolescent or adolescent;
b) the cases in which a specific capacity for discernment appropriate for the task being analysed is present and those in which it appears premature or in progress or not adequate to the complexity of the situation under examination.

An essential ethical principle of child rights is that information must be provided in a language and/or form of communication that is congruent with the child's evolving capacity to understand and respond (20). The recent Italian legislation on consent and end-of-life provisions has introduced a norm of particular ethical significance that states that "the time of communication is time of treatment" (21). This provision constitutes a valuable principle in the hypotheses of conflict between doctor-child; child-parents; doctors-parents.

Particularly significant are some decisions of the Italian juvenile judiciary in cases of very serious disease with uncertain prognosis that have identified in the principle of self-determination of minors an important criterion of orientation in the resolution of conflicts between physicians, who believed it was necessary to implement therapeutic programs indicated by official medicine, and parents, who refused the medical decision and preferred other therapeutic strategies (22). In these cases, judges have enhanced the negative will of the minors and have denied the forced imposition of the experimental treatment. Such decisions of the Italian judges on the events, tragically concluded with the death of the involved children, are in line with the provisions of Directive 2001/20 / EC of The European Parliament, which in Article 4 states that "the explicit wish of a minor who is capable of forming an opinion and assessing this information to refuse participation or to be withdrawn from the clinical trial at any time is considered by the investigator".

The conflict and balance between the principle of beneficence and the related principle of autonomy, between the need for protection and instances of self-determination, could therefore find natural limitations in cases in which the choices of the minor appear imponderable or irresponsible and likely to lead to situations of damage or danger to his/her physical and mental integrity.

In such a context, as in every other aspect of the wider debate relating to the self-determination and autonomy of the minor, a risk still remains where a greater flexibility of the rule may cause arbitrary, personal, subjective assessments, which may forget and sometimes go beyond the epistemological boundaries and ethical aspects of the question.

In assessing the decision-making capacity of the child, specifically for that particular situation, case by case, it is also necessary to provide adaptation interventions and environmental supports aimed at improving and enhancing the skills necessary for his/her involvement.

Conclusions

The child's participation in care choices is an important factor capable of conditioning the therapeutic path and its effectiveness. A specific competence in communication with children that takes into account, in addition to age, also maturity and their different cultural backgrounds should become an integral part of the curricula of physicians, nurses and specialists that work with minors.

The process of empowerment of minors can also be positively or negatively influenced by the family which seem to underestimate the child's ability to express himself. In addition to the family, it is also well known that there are also other social institutions (such as schools), delegated to fully develop the potentialities of humans and the promotion of an authentic autonomy of individuals.

Moreover health professionals may become more involved in the process of implementation of decision-making capacities, taking into account the state of illness, which if not carefully treated, can represent a significant existential limitation (23).

Autonomy, should not be considered, especially in the clinical setting, as a prerequisite, but as a goal to be sought and constantly built within the relationship, in that encounter between the principle of autonomy and beneficence, expressed in the therapeutic alliance (24). An autonomy vitiated by assumed presuppositions and by no means obvious, risks becoming the instrument of a defensive medicine both in the case of adults and, even more dramatically, in that of minors.

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Medicina Historica 2019; Vol. 3, N. 1: 58-62 © Mattioli 1885

Abridged academic biography of Professor Paolo Vanni: Emeritus of Biochemistry at the University of Florence School of Medicine

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Paolo Vanni was a disciple of Professors Vincenzo Baccari, Andrea Guerritore and Gianpietro Ramponi. While the latter supported Vanni's appointment to Emeritus status in 2012, the first two are his scholarly mentors and *domines*; especially Prof. Andrea Guerritore, who kicked off and supervised the Florentine professor's career as a biochemist[1].

Vanni has been one of the founders of Compared Biochemistry and Vegetal Biochemistry in Italy (2, 3). Prof. Baccari directed him toward the study of enzymatic kinetics, which has been one of Vanni's fortes (4, 5). In 1971, Vanni became Lecturer of Biological Chemistry and in 1980 he won the open competition to become Full University Professor of Biochemistry. Yet, he only taught this subject for one academic year at the Faculty of Natural Sciences at the University of Sassari. The year before, he taught Organic Chemistry of the Organic Substances at the University of Florence School of Pharmacy. His beloved subject was and is Medical Chemistry, which he taught to all freshmen of the University of Florence School of Medicine from January 1964 through November 2010.

Vanni was extremely popular among his students[2], because he loved to spend a lot of time with them and not only in the classroom! In fact, Vanni organized and led many student ski trips on the Marmolada, Falzarego, Four Passes, Civetta, etc. During those skiing weeks, Vanni also organized make-up classes for those who failed his exam. His former students went skiing with him and his family until 2017, including some of his devoted disciples such as Francesco Ranaldi.

Speaking of which, one cannot avoid mentioning that Vanni had three main disciples: Maria Teresa Vincenzini, Professor of Biochemistry at the University of Florence, and the Associate Professors Eugenio Giachetti and Francesco Ranaldi, who replaced him in the teaching of chemistry at the University of Florence School of Medicine. In addition, he also worked a lot with the latter on vegetal enzymology; particularly on the effects of enzymatic catalysis in hypo-gravity. Two of his experiments were approved by both the European Space Agency (ESA) and the Agenzia Spaziale Italiana (ASI) to study the effects of hypo-gravity on the catalysis of isocitrate lyase, an important enzyme of the glyoxylate cycle. While on the isolated molecule the hypo-gravity does not produce particular effects, on complex structures or cellular structures it has an important activation of the enzymatic catalysis and the cellular growth (6-9).

In 1974, and again in 1977-1978, he was visiting professor within Prof. Giorgio Semenza's chair at ETHZ's Laboratorium für biochemie, where he demonstrated the presence of a carrier for Vitamin C in the guinea pig's intestine (10). In addition, in 1988 he was visiting professor at Washington State University upon the invitation of Prof. John MacFadden (11),

[1] Vanni wrote a heartfelt obituary of Prof. Guerritore on December 12, 2017 (1).

[2] More than 300 of his former students attended his farewell lecture in December 2010.

Figure 1. Prof. Vanni and the rescued tip of the maser 7 rocket at the Kiruna Space Base Sweden (Artic Pole Circle).

during which period he published an important article on the Vanni published over 200 works on biochemistry as either author or co-author.

Together with Drs. John and Evelyn Billings, he led a research team on the structure and function of the human cervical mucus for fertility experiments together (12). He wrote many manuals of general chemistry, organic chemistry, biochemistry exercises, human biochemistry, dental materials, etc.

When history of medicine was reintroduced in the curriculum of the Italian Schools of Medicine, Vanni was charged with teaching it. Since 1995, moreover, he has been publishing hundreds of works on the history of medicine and the Red Cross movement between peer-reviewed articles, conference proceedings and invited lectures.

In particular, his works on the Red Cross history are of a certain relevance. He is one of the first Italian scholars to write about Henry Dunant and popularize his ideas among Italian students. Dunant is indeed the true and most important founder of the ICRC. Vanni published the first Italian edition of Dunant's memoirs edited by Prof. Bernard Gagnebin of the University of Geneva (13).

In 2001 Vanni was a visiting professor at Prof. Edward Shorter, Toronto University Institute of Medicine History to conduct research on Norman Bethune, a Canadian surgeon who worked with H.Dunant after the Battle of Solferino 1859 (14).

In 2002, the President of Italy, Dr. Carlo A. Ciampi, met with him on the occasion of the centennial anniversary of the Nobel Peace Prize awarded to Dunant in 1901. From 2002 onward, Vanni has published numerous edited volumes, monographs and articles concerning military medicine and surgeon gen-

Figure 2. Prof. Vanni is received by the President of the ICRC in Geneva, Dr Peter Maurer (center). On the right the Dr Francois Bugnion member of the ICRC.

eral corps. One of the most famous articles is that on the behavior of the Italian MD officers at the Battle of Adwa in 1896 (15). On behalf of the Italian Red Cross, in 2004 he established the national courses of History of the Red Cross Movement and Medicine: the 14th course is under preparation. He organized 18 symposia on the history of medicine and Red Cross in Italy and abroad. He was appointed honorary member of the Italian Society for Military History and of Rome Accademia dell'Arte Sanitaria.

He published all of Henry Dunant's handwritten memoirs, which were bought by the Tuscan Regional Committee of the Italian Red Cross chaired by Dr. Francesco Caponi, 11 volumes, about 6'000 pages (16). Together with his colleague Prof. Costantino Cipolla of the University of Bologna he is the principal editor of the series *Sociologia della Croce Rossa* for the publishing house Franco Angeli. The editorial board of this series is composed of the world's most important scholars of the sociology and history of the Italian Red Cross.

For the above-mentioned series, Vanni and his colleagues published the only complete history of the 150 years of the Italian Red Cross. Up to now, 8 volumes were published covering the period between its foundation and the outbreak of the Great War (17). It is a massive and important collection of volumes, which Vanni and Cipolla will leave to their disciples to complete in the next decade.

In his hometown, Florence, he has been editing the series *I quaderni di Henry Dunant* for the publishing house Tassinari. In the Tassinari series, apart from the 11 volumes of the memoirs of Dunant, there were also three volumes on the history of the ICRC between Solferino and San Martino (1859) and the siege of Diem Bien Phu,1955 (18-20).

Figure 3. Prof. Vanni is received by the President of the International Federation of National Red Cross Societies and President of the Italian Red Cross, Dr Francesco Rocca, in the center. On the right the Dr Francesco Caponi, President of the Regional Committee CRI of Tuscany (Florence). They show the X tome of the Henry Dunant Manuscripts.

Vanni was received by two presidents of the ICRC, Jacob Kellenberger and Peter Maurer, who congratulated him for his publications. Both presidents described the works published by Vanni and his colleagues (e.g., *Un Souvenir de Solferino* with Cipolla and the only existing translation of the seventh edition with Maria Grazia Baccolo) as unique and extraordinary. In particular, Peter Maurer appreciated very much the role of Italy in this scholarly activity (21-23).

In 2006, Vanni was appointed National Delegate for the History of the Italian Red Cross by the then president, Dr. Massimo Barra, and confirmed in such role by the current president, Mr. Francesco Rocca. Rocca appointed him also National Referee for the History of the Italian Red Cross. In February 2018, Rocca appointed him chairman of the National Academic Committee for the History of the Italian Red Cross in which seat also Professors Giuseppe Armocida (University of Varese), Valentina Gazzaniga (University of Rome "La Sapienza"), Carlo Focarelli (University of Rome 3), Giuseppe Parlato (UNINT University Rome), Stefania Bartoloni (University of Rome 3) and Duccio Vanni (University of Florence).

As per his full CV, Vanni taught and trained numerous experts of the history of the Red Cross and of medicine (CISCRi or *Cultori Italiani di Storia della Croce Rossa internazionale*). The CISCRi title and certificate is awarded to the attendees of the national courses organized by Vanni. Scores of CISCRi are now contributing to the volumes edited and wrote by Vanni.

Professor Vanni has been appointed Accademico della Colombaria in 2012 and 2015, and in 2015 of the Accademia dei Georgofili, which are two of the most prestigious Florentine academies.

He was awarded the Italian Red Cross Silver Medal in 2009.

Apart from the innumerable invited lectures, conferences, symposia, round-tables and book launches, one can only congratulate him for his 421 publications. Hats off!

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L'occhio di d'Annunzio, Maurizio Rippa Bonati, Edoardo Midena, BIBLOS, Cittadella (PD) 2018, ISBN 978-88-6448-131-9, pp. 136.

January 1916, Venetian lagoon. A small Italian two-seat airplane, during an exploratory war operation, made an emergency water-landing. In the collision the passenger violently hit the right eyebrow arch with a severe trauma to the right eye and a supraciliary skin wound. Thus, the illness and the long convalescence of Gabriele d'Annunzio (1863-1938), observer of the Italian Royal Army in the First World War began. After the accident, the symptomatology was utterly neglected for many days, however, one month after it could no longer be ignored prompting the reluctantly Vate to rely on doctors. Numerous luminaries of Italian and international ophthalmology of the time were contacted, including Dr. Orlandini, Cirincione, Landolt and Albertotti. In particular, the cultured professor of the University of Padua, Giuseppe Albertotti (1851-1936), assisted d'Annunzio during the whole period of convalescence as a clinician and also as a man of culture. However, his erudition was sophisticated but not always required. The book, among other peculiarities, proposes the unprecedented transcription and analysis of the letters between the patient d'Annunzio and his physician Albertotti allowing the authors to shape a precise and captivating reconstruction of the restless illness period of the Italian Poet in the months from January to September 1916. From the careful and scrupulous examination of historical-medical sources, the lapidary diagnosis of d'Annunzio's pathology is blunt bulbar right trauma with haemorrhagic phenomena and choroidal and retinal exudative phenomena followed by a macular fibrosis. However, a precious result of this sickness period is the profoundly introspective work *Notturno* (1916) written by the Poet. This peculiar and unexpected character arises from the injury to the right eye and from the forced blindness imposed on d›Annunzio, to avert a sympathetic ophthalmia in the left eye. Maurizio Rippa Bonati and Edoardo Midena, professors of the School of Medicine of the University of Padua, used a wise and detailed method to analyze both known and unpublished sources, igniting a new and «suggestive» light on one of the most notorious renowned Italian protagonists of the Great War, offering a «clinical» and human exclusive portrait to the audience.

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