

Some examples of treatment for the aortic aneurysm in use during the *Belle Époque*

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Abstract. The following report briefly illustrates the developmental level of aortic aneurysm treatment, as it is portrayed in a compendium of general medicine which dates back to the early 20th century.

Key words: aortic aneurysm, cardiovascular medicine, *Belle Époque*

Conventionally dated from the end of the Franco-Prussian War to the outbreak of World War I, the period commonly known as *Belle Époque* was characterised by a widespread confidence and a renewed passion towards the discoveries of Science and Technology, which were gaining a foothold both in Europe and in USA between the 19th and the 20th centuries (1). In this regard, Medicine made great strides in several fields. For example, X-rays were introduced for the radio-diagnostic; Bacteriology and Serotherapy took hold; blood groups were discovered; salicylic acetylated acid was widely sold; vascular sutures spread; physiopathology was used to make sense of several diseases, in what was becoming an increasing accurate Semeiotic. Definitely, many medical fields started to take on a sort of connotation that may be considered the backbone of their modern scientific paradigm. In this context, we would like to detect the first fruitful signs of contemporary *Cardiovascular Medicine* (2, 3): therefore, in this report we will briefly present some instances of treatment specifically employed for the *aortic aneurysm* (a topic largely debated in the medical literature of the 18th and 19th centuries), in the way in which they were portrayed in the Italian medical textbooks for practitioners in the early twentieth century. In particular, we think that Filiberto Mariani's summary illustration that concerns the developmental level of aortic aneurysm treatment is thorough, although schematic. Mariani (1867-1919), physician of the University of

Genoa, inserted it in his *Compendio di Medicina interna e Terapia razionale* (Milan, 1902) (4).

The aortic aneurysm was described as a *dilatation* that was to be found in a segment of the vase: if the aortic tunica was not torn a *true aneurysm* would occur. This kind of aneurysm was also classified as *cylindrical*, or *resembling a sac* (5). Among the determining causes of the onset of the aneurysm there were old age, alcoholism, arteriosclerosis, syphilis, gout, lead poisoning; as for other causes that could contribute to the aetiology of this illness, it is worth to mention the effect of jobs, like that of porters or manual labourers, and that of particular physical activities, such as riding.

The treatment for this pathological manifestation derived from the observation of the spontaneous process of healing, or better, of the compensation of the disease. Inside the aneurysmal dilatation clots of blood form and, as they increase in size, they reduce the effect of the aneurysm. Thus, the treatment approaches suggested before and during the *Belle Époque* had the purpose of favouring the formation of clots inside the dilation of the aneurysm.

One of the first procedures mentioned in Italian medical textbooks of that era is the ancient *Valsalva method*, which was said to be still employed with success in the clinics of Genoa and Rome. This method consisted in daily bloodletting that, if combined with a proper diet and a period of rest, could have diminished the quantity and the strength of the bloodstream, in

this way favouring the spontaneous formation of blood clots, but also, in fact, decreasing the blood pressure.

According to the indications of Fergusson, massages were also provided, together with applications of astringents, refrigerants, *Collodion* and even caustic substances. In particular, the instillation of astringent substances in the lumen of the aneurysmal sac was previously conceived by Giovanni Battista Monteggia (1762-1815), who would use alcohol, lead acetate and tannin. At a later time, iron acetate, lactate, iron perchloride and ergotin were also employed.

A controversial method was that of the acupuncture thought up by Alfred Valpeau (1795-1867), who envisaged to put up to fifty needles inside the aneurysmal dilatation in order to break the bloodstream and consequently induce the formation of the clot. However, subsequent applications by other doctors (also Italian ones) were not successful.

Between the first and the second half of the 19th century, electricity was beginning to be applied on aneurysms as treatment, believing that the electric current would provoke the coagulation of blood. Among the others, many Italian doctors studied and applied this galvanic-acupuncture method and its variations: we remember Luigi Ciniselli (1803-1878) in Cremona (6), and Stefano Balp and Errico De Renzi (1839-1921) during the *Belle Époque*. Mariani underlined how galvanic applications used as treatment were well tolerated and didn't cause haemorrhages. He suggested the use of six needles and an electric current that should not be too intense (around 40-45 degrees on the galvanometer). The applications could be administered with an interval of 8 to 15 days.

Guido Baccelli (1830-1916) (7), renowned roman clinician, devised a system to induce the formation of clot through the introduction of a tiny clock spring in the lumen of the sac of the aneurysm, that is to say, where protein factors favour the coagulation aggregate. Such procedure was then improved by Baccelli's pupil, Mariani, who regularly employed it in his clinical activity.

In 1897 another newly-conceived method was presented at the Medical Academy of Paris by Lancereaux and Paulesco (8): according to this technique, aneurysms were to be treated through hypodermic injections of gelatine, with the idea that gelatine could eas-

ily favour the coagulation of blood. A debate on the effectiveness of this method followed, and many European doctors tried to test its experimental and clinical effectiveness. Mariani too was persuaded to apply this method, but the results he got were of no consequence as for the treatment of aneurysms.

Indeed, the treatments that developed during the *Belle Époque* were not fully effective and conclusive. However, in this period, Alexis Carrel (1873-1944) carried out ground-breaking studies on vascular suture and organ transplant, for which he was awarded the Nobel Prize for Medicine and Physiology in 1912. Carrel was a friend of René Leriche (1879-1955), the teacher of Michael DeBakey (1908-2008). DeBakey became famous for the classification and surgical treatment of the aortic dissection.

In conclusion, the thin silver thread that leads to the modern treatment of the aortic aneurysm can be traced back to the *Belle Époque*.

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