The cancer patient and medical dermo-pigmentation: psychological aspects.

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Abstract. This work aims to assess breast cancer treatment's physical and psychological impact on patients undergoing it, particularly regarding emotional and social issues. The focus is on the extent to which reconstructive procedures can alleviate problems the operated patients are facing and on whether the completion of the reconstructive procedure, through the reconstruction, or restructuring of the nipple-areola complex through minimally invasive methods, such as tattooing, i.e. micropigmentation, is an important requirement in order for the patient to forget about the disease, or reduce the impact its memory brings.

Keywords: humanisation, medical tattooing, reconstructive surgery, to care, lived experiences, psychology, evaluation, patient satisfaction

Introduction

Breast cancer is the most common cancer pathology among women and the second most frequent cause of death from malignant disease in Europe (1). Italy has an estimated 55,000 new cases per year, with an increase of 0.3 %. Furthermore, according to the frequencies with which it is diagnosed in the various age groups, breast cancer is the most frequently diagnosed cancer among women in the 0-49 age group (41%), the 50-69 age group (35%), and the older +70 age group (22%) (2). In Italy, over 834,000 women have been diagnosed with breast cancer, accounting for 43% of all women living with a previous cancer diagnosis and 23% of all prevalent cases (accounting for both men and women).

The visible decrease in breast cancer mortality (minus 6% from 2015 to 2020) can be attributed to more widespread early detection programmes and therapeutic advances. Today, considering all stages of the disease, the 5-year survival rate for women with breast cancer is 87% in Italy.

In order to achieve these results, the Breast Units were set up since it has been proven that a multidisciplinary approach increases the probability of survival and improves the quality of life prospects of breast cancer patients. These units comprise a team of highly qualified specialists dedicated to diagnosing, supporting, and treating breast pathology (3). The aim is to accompany the patient through the entire diagnostic, therapeutic, and follow-up process from the earliest possible stage of the disease. Any woman who receives a diagnosis of breast cancer, in fact, suddenly sinks into a psychological condition of extreme distress, not only because of the meaning and implications of the pathology itself but also because the breasts are a part of the body that, together with the genital apparatus, concretely and symbolically represent femininity (4).

Female identity is mainly structured around concepts such as motherhood, femininity, attractiveness, and desirability. Because of such a paradigm, many women consider having intact and healthy breasts indispensable.

We must consider how, over time, the female image has played an important role and changed the canons of aesthetics with the historical moment. We can follow the evolution of this feminine ideal through the artistic representations handed down to us, from Willendorf's Venus to Milo's Aphrodite, to Rubens' paintings, to the fashions of the 1970s, with Twiggy's provocative thinness. The search for body harmony can be seen in the ancient Egyptian world as well, with the discovery, thanks to scanning, of Queen Nefertiti's 'retouched' face on her death mask (5, 6).

So, if the diagnosis and the course of chemotherapy (and often radiotherapy) create a deep furrow in a woman's life, surgery, even with increasingly fewer mutilating operations, leaves an indelible furrow visible daily. Moreover, the contact with one's maimed, 'cut', and incomplete breast entails a psychic wound that involves the whole spheres of one's life, such as the physical, the relational and the professional (7). It is a reality that demands much of the woman, disrupting her life in all areas, which makes the presence of psychological support necessary to help her deal with the psychic experience and emotional burdens, that this new reality entails.

The possibility of reconstruction, or remodelling, of the operated breast using reconstructive plastic surgery is of great importance. This procedure can begin during oncological surgery or subsequent thereof (8). It aims to attempt to restore that body image altered by the therapeutic, surgical procedures as best as possible,

Numerous reconstructive techniques can be used for this purpose, depending on the type of surgery performed and the woman's wishes, physical condition, and work and family situation (9). The final stage of this process involves the reconstruction, or revision, of the nipple-areola complex.

Many different techniques can be used to this end as well. Some require the reconstruction with local flaps or the removal of a portion of the areola from the contralateral breast; others need the removal of a superficial layer of skin to be grafted in the area to be reconstructed (10). The choice of reconstructive method for the areola-nipple complex depends on several other variables as well.

An important recent option for non-surgical reconstruction, or revision, of the nipple-areola complex is tattooing. This is a minimally traumatic procedure, with good aesthetic results, that, since 2019, has been included in the LEAs and is, therefore, recognised by the NHS.

This treatment originates from procedures handed down through the ages and used for various reasons and purposes, even medicinal ones often with oils and ointments (11). The historical reasons for tattoos are incredibly varied too. For example, a tattoo could signify religious affiliation, caste, or honour. In other circumstances, tattoos have been used to mark outcasts, political (and war) prisoners, and certain criminals. This to such an extent that tattoos became highly stigmatised, together with other physical or behavioural manifestations, being looked upon as the prerogative of people with a violent and criminal character (12, 13).

Thanks to the support of "Italian League for the Fight Against Cancer "(LILT), we conducted a study to ascertain both how much the patients wished to complete their physical and psychological rehabilitation process with the reconstruction of the nipple-areola complex and how satisfied they were with this procedure.

The cancer patient's emotional experience

It is difficult for any woman, such a sensitive, multifaceted, and profound person, to understand and describe a breast cancer diagnosis's impact on her life. This impact can, metaphorically and reasonably, be compared to the shockwave of a bomb exploding a few metres away. Generally, the prevailing emotions related to the diagnosis are shock, uncertainty, fear, bewilderment, and existential threat (14).

The woman remains stunned and does not immediately understand what is happening to her. She suddenly feels anxiety and nervousness, as if everything has lost meaning, or she feels nothing at all, each emotion so powerful that it must be suppressed not to overwhelm her psyche completely.

The swiftness with which the medical and care staff take charge of her and the activation of the therapeutic protocol, on the one hand, help the patient understand how vital her current clinical condition is, in

some way bringing her back to reality and, on the other help her perceive an initial sort of protection concerning what is happening to her.

A breast cancer diagnosis profoundly changes a woman's perception of personal identity, her body's identity, her femininity, the meaning of motherhood, and how attractive and pleasant she believes she is perceived to be. The woman who experiences a breast tumour and the invasiveness of therapies and surgeries has to deal with deep feelings of loss, impairment, and despair. Generally, she experiences cancer as a monster, an unwelcome guest, and a threat to her existence and her plans for life and family relationships.

Everything fades into the background, and other elements, no less significant than the 'trauma shock' and fear of death, enter the woman's emotional experience, such as

- psychosocial consequences: such as the interruption (or loss) of a career, changes in one's role in the family, significant changes in one's social life.
- consequences of treatment: nausea, loss of fertility, alopecia, pain, and others.
- the evolution of the illness causes the patient to live in a state of continuous alertness, with fear being rekindled at every check-up, even when things are going well (15).

Intrafamilial and extrafamilial relationships are transformed since this pathology requires the person affected by cancer and the whole family to adapt to significant changes. Most often, one member of the patient's family assumes responsibility for her care and assists her in caring for her health, emotions, finances and logistics. This family member becomes the rock that must not crumble, risking, in turn, needing psychological support for him or herself (16).

The cancer patient goes through various phases during her personal experience with the illness, which may alternate between each other or settle with a prevailing one dominating the others: the Denial or Rejection Phase, the Anger Phase, the Coping Phase, the Depression Phase and the Acceptance Phase (17).

The Denial or Rejection Phase, which usually follows diagnosis, represents a period of shock, denial and rejection of the current state of affairs. Catastrophic experiences arise, and reality is too painful to be faced (18). Only during the Anger Phase does the first impact on reality occur. The woman often becomes angry with herself, the illness, the doctors, or her loved ones. She also feels anguish, despair, and bitterness. She finds it difficult to control her emotions, experiences a childlike feeling of bewilderment, and may engage in regressive defensive behaviour. The Coping Phase generally follows the active period of treatment. The patient has experienced her vulnerability and senses the limits of her life and body. It is the time to reflect on her past choices, future intentions and desires. The Depression Phase represents when the woman begins to become aware of the losses she is suffering or is about to suffer, and, therefore, experiences a depressive state, in the first case of the reactive type, in the second the anticipatory type. In this phase of the illness, the patient can no longer deny her condition and becomes aware that rebellion is no longer possible, so a strong sense of defeat replaces her previous denial and anger. Finally, during the Acceptance Phase, the woman resumes living by including the experience of her illness, the changes in identity or lifestyle that have become necessary, and the learning about herself that she has achieved in it (19).

The woman with breast cancer copes with these phases by implementing particular attitudes and behaviours that characterise her as an individual, which she uses to face difficulties.

These attitudes and behaviours are grouped into what was initially defined by Lazarus and Folkman as Coping Styles. The main ones are Combative, Fatalist, Anxious, Avoidant, and Desperate (20). For example, to cope with the emotional burden of her diagnosis, the patient may, once she has discovered that she is ill, implement (more or less consciously) strategies to try and cope with the event and what follows it. She may, for example, seek better information (rationalisation), underestimate the seriousness of the diagnosis (minimisation), lash out at someone (projection), accept the diagnosis, and find favourable aspects (redefinition), and try not to think about it (repression). At other times she may fall into substance abuse (tension reduction) or isolate herself socially (stimulus reduction).

Other factors that generally influence the patient's reaction to a cancer diagnosis, and her adaptation to the illness, are: medical, spiritual, social, and psychological (21).

Coping styles, in addition to personal attitude, are also determined by the patient's meaning of her illness and the clarity and accuracy of the information she receives about her condition. That is why the work of the Breast Unit is vitally crucial in addressing the psychological aspects, which are no less important than any other since having a positive personal attitude may improve health status. Conversely, a negative attitude may not be conducive to better health (22).

As previously mentioned, the Breast Unit, or Multidisciplinary Senology Centre, specialises in diagnosing, treating, and psychophysical rehabilitation of breast cancer women. The staff of the various teams spread throughout Italy, in collaboration with that of the local LILT offices, plays a fundamental role in taking care of patients in every aspect. From a psychological point of view, factors such as a welcoming environment, the presence of help nearby, empathy, emotional support, and professionalism on the part of the staff of both the aforementioned bodies are essential to guarantee an acceptable level of emotional wellbeing in a traumatic life situation, such as that of neoplastic pathology. As mentioned above, the Coping Styles are also determined by comprehensive information about the disease and its secondary aspects and by the ability of medical (and care) staff to put the breast cancer patient at ease so that she feels completely confident to place herself in their hands.

A further step forward in the psychological and physical care of women is represented by breast micropigmentation (23).

The procedure was made possible in Liguria (north Italy), thanks to the funding of a research project of the national LILT at the local section of Sanremo which involved the Breast Units of ASL1 Imperiese, San Martino Polyclinic Hospital and ASL4 Chiavarese.

The University of Genoa has also set up courses to qualify health workers to practise medical tattooing and providing regulatory and deontological support (24).

Materials, Methods, and Results

Concerning the psychological aspects of the use of dermo-pigmentation in healthcare, an anonymous questionnaire was prepared by the working group to ascertain the satisfaction of patients who received this treatment.

The questionnaires were proposed to 81 patients at the Breast Unit, Asl 1 during a follow-up visit. Participation in the compilation was entirely voluntary and was aimed at verifying:

- How much patients desired a complete breast reconstruction, including the areola-nipple complex.
- The opinion of patients who have undergone such a procedure.
- The patient's opinion of the reception, and helpfulness, of the medical and nursing staff.

All but one of the patients underwent a total mastectomy and received an anatomical prosthesis. In addition, approximately half had undergone chemotherapy, while 18% also received radiotherapy.

The patients were asked how important they considered reconstruction of the areola-nipple complex to be: 36% considered it extremely important, Value 3, 48% considered it somewhat necessary, Value 2, and only 16% considered it unimportant, Value 1 (Figure 1).

Similarly, the patients were asked how useful they considered completing the reconstructive process, with the areola-nipple complex resurfacing, to be for themselves and their relationship life. Seven out of 81 (9%) patients considered it exclusively valuable for their relationship with others, 25 (31%) deemed it valid for themselves 49 (60%) thought the reconstruction of the areola-nipple complex was necessary from both points of view (Figure 2).

As far as being tattooed was concerned, given that medical micropigmentation consists of the three-dimensional tattooing of a nipple and an areola, we wanted to investigate the patient's familiarity with the subject. Approximately 75% of the sample group had no tattoos, of which 48% felt that the dermo-pigmentation procedure was invasive. Interestingly, only 25% of the patients in the sample who had already experienced tattooing felt the same way.

Eighty-nine per cent agreed that they had received comprehensive information about the procedure, while about the patient's satisfaction following the administration of the dermopigmentation treatment of the areola-nipple complex, the work group wanted to explore some parameters such as shape, ap-

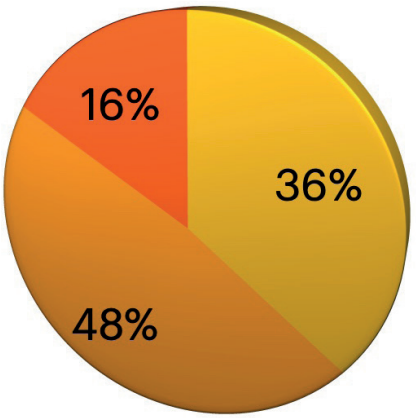

Figure 1. How important they considered reconstruction of the areaola-nipple complex

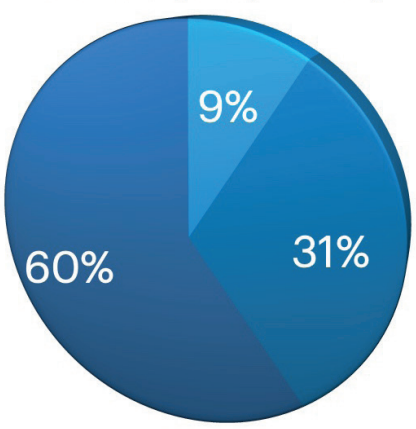

Figure 2. How useful they considered completing the reconstructive process, with the areola-nipple complex resurfacing

pearance, naturalness, colour and height of the result in toto.

Concerning shape, only 6% of the patients in the sample were dissatisfied, while 52% were fairly satisfied and 42% were highly content (Figure 3).

Similar results were obtained about colour 7% (somewhat dissatisfied patients), 53% (rather satisfied) and 40% (very satisfied) and height 4% (somewhat dissatisfied patients), 55% (rather satisfied) and 41%, (very satisfied).

Appearance and naturalness represent less tangible criteria, if one can say so, but are decisive for the whole procedure's success. For these parameters, the percentages of satisfaction were: 56% for the first criterion and 52% for the second, while those who reported great satisfaction represented 38% and 42% of the sample.

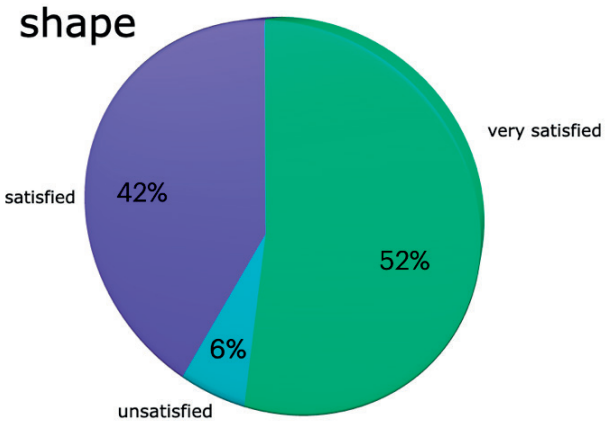

Figure 3.

As for the relationship with the medical, nursing, and care staff: it was considered essential. Therefore, patients were asked to report their opinions on professionalism, preparation, kindness, and welcome shown by the staff.

Patients who ultimately agreed (value 3) on the fact that the healthcare personnel were prepared stood at 60%; 51% found them to be very thorough (51%) and professional (52%), while those who reported that they were only instead in agreement with the statement about the staff's preparedness (value 2) averaged 42% for the three parameters considered here (Figure 4).

With regards to the characteristics of humanity and empathy of the healthcare personnel, the patients ultimately agreed that personnel had been respectful

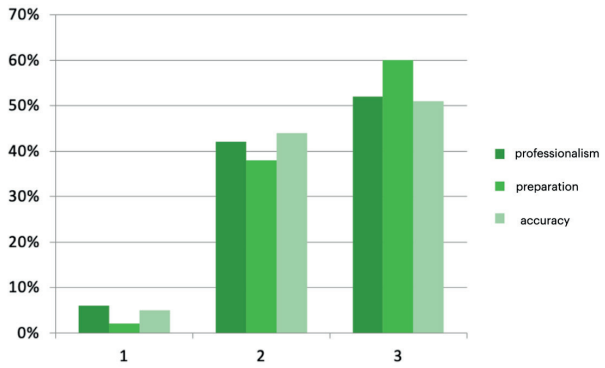

Figure 4.

(54%), friendly and kind (55%), had put them at their ease (47%), and had devoted the right amount of time to their concerns (55%). On the other hand, the dissatisfaction rates were between 4% and 7%.

Conclusions

A total reconstruction of the breast complex is crucial in perfecting physical and psychological healing following surgery and chemo- and/or radiotherapy treatments during a breast cancer diagnosis. The work group study outlined above showed that breast cancer patients consider reconstructing the areola-nipple complex significantly important. They regard it as a beneficial procedure, not only for themselves, to restore the integrity of their sense of identity, but also for their aspiration to live a satisfying relational life after the illness. Moreover, about 40% of the sample believes that micropigmentation is invasive. However, this percentage is halved if only patients who have already experienced tattooing are considered. Having experienced a similar procedure before (in addition to being given accurate information) allows for a more objective assessment. In this regard, it would be interesting to verify whether the subjective evaluation of patients who have never received a tattoo is negatively affected by the invasiveness of the treatments and surgeries they have already undergone so that, at a certain point, any further 'touch' in such a sensitive, and intimate, area as the breast is experienced as an intrusion, even when it would not have been otherwise...

The humanity of people is one of the main drives for women with breast cancer to go on despite their illness. Sharing and talking about the experience of the disease, the emotional experience, the problems at home, feeling understood and supported in one's difficulties and needs, and at the same time being able to rely on health personnel at such a difficult time in one's life, is, in our opinion, fundamental for a correct, and complete, patient care, and favours a better psychophysical response to the cancer event on her part.

Above all, this happens at the end of the reconstructive pathway, when tiredness and suffering have become her regular companions. Nevertheless, the patient begins to glimpse a future for herself beyond the suffering caused by the illness, so it is vital for her to encounter the humanity, professionalism, and welcome of the health personnel and to face the final steps of the reconstructive phase through medical dermopigmentation of the areola and nipple, with hope and serenity.

The patients of the practice who have undergone this procedure are remarkably pleased, not only with the overall result but also with individual features such as the shape and height of the nipple, the colour of the reconstructed areola-nipple complex, and the appearance and naturalness of the result, which are less tangible qualities, more subjective to personal biases.

As professionals dedicated to the care of the whole person, we believe it is necessary to inform clinicians, and patients, of the value and safety of breast-areola tattooing as an intervention downstream of the diagnosis and course of treatment, to restore balance, provide the patient with an excellent final aesthetic outcome, and recover the patient's wellbeing (psychological as well as physical), according to the concept of health defined by the WHO as the ability to adapt and self-manage in the face of physical, psychic, and emotional challenges (25).

When we speak of breast cancer, we often mainly focus on prevention and treatment without fully considering the 'after' and the psychological repercussions of the disease that require taking care of the person to be overcome.

Post-surgery psychological rehabilitation, and related recovery opportunities, also involve treatments with aesthetic purposes. To this end, we aim to make health dermopigmentation the treatment of choice.

The emotion and light in the eyes of our patients, when they see themselves for the first time after the reconstructive process has been completed is the ultimate proof of this, and that is all we need.

Acknowledgements. The authors gratefully acknowledge the economic support obtained from LILT (Lega Italiana per la Lotta contro i Tumori (Italian League for the Fight Against Cancer) and DDProject for technical support.

A disclosure / conflict of interest statement:
None of the authors of this manuscript has a financial or per-

sonal relationship with other people or organizations that could inappropriately influence or bias the content of the paper.
It is to precisely state that "No Competing interests are at stake and there is No Conflict of Interest" with other people or organizations that could inappropriately influence the content of the paper.

References

1. Arnold M, Morgan E, Rumgay H, et al. Current and future burden of breast cancer: Global statistics for 2020 and 2040. Breast 2022; 66:15–23.
2. AA.VV. I numeri del cancro in Italia. Brescia: Intermedia Editore; 2021. https://www.aiom.it/wp-content/uploads/2021/10/2021_NumeriCancro_web.pdf
3. Biganzoli L,Cardoso F, Beishon M, et al. The requirements of a specialist breast. Breast 2020; 51:65–84.
4. Polivy J. Psychological effects of mastectomy on a woman's feminine self-concept. J Nerv Ment 1977; 164(2):77–87.
5. Swinth K. Categorizing the Female Type: Images of Women as Symbols of Historical Change. Rev Am Hist 2002;30(4):604–13.
6. Huppertz A, Wildung D, Kemp BJ, et al. Radiology 2009; 251(1):233–40.
7. Jamison KR, Wellisch DK, Pasnau RO. Psychosocial aspects of mastectomy: I. The woman's perspective. Am J Psychiatry 1978; 135(4): 432–6.
8. Heimes AS, Stewen K, Hasenburg A. Psychosocial aspects of immediate versus delayed breast reconstruction. Breast Care 2017; 12(6): 37–47.
9. Franchelli S, Leone MS, Berrino P, et al. Psychological Evaluation of Patients Undergoing Breast Reconstruction Using Two Different Methods: Autologous Tissues Versus Prostheses. Plast Reconst Surg 1995;95(7):1213–8.
10. Jabor MA, Shayani, Collins P, Donald RJr, Karas T, Cohen BE. Nipple-Areola Reconstruction: Satisfaction and Clinical Determinants. Plast Reconst Surg 2002;110(2):457–63.
11. Gorini I, Iorio S, Ciliberti R, Licata M, Armocida G. Olive oil in pharmacological and cosmetic traditions. J Cosmet Dermatol 2019; 18(5):1575–9.
12. Lombroso C. L'uomo delinquente [The Delinquent Man]. Turin: Bocca; 1876.
13. Ciliberti R, Monza F, De Stefano F, Licata M. The trial of the skull studied by the founder of Criminal Anthropology: The war of the Lombroso Museum. J Forensic Leg Med 2018; 59:13–5.
14. Holmberg SK, Scott L, Alexy W, Betsy L. Relationship issues of women with breast cancer. Cancer Nurs 2001;24(1):53–60.
15. Breitbart WS, Alici Y. Psycho-Oncology, Harv Rev Psychiatry 2009;17(6):361–76.
16. Foy S, Rose K. Men's experiences of their partner's primary and recurrent breast cancer. Eur J Oncol Nurs 2001;5(1): 42–48.
17. Kübler-Ross E, Wessler S, Avioli LV. On Death and Dying. Jama 1972; 221(2):174–9.
18. Stenberg U, Ruland CM, Miaskowski C. Review of the literature on the effects of caring for a patient with cancer. Psycho-oncol 2010; 19(10):1013–25.
19. Perry S, Kowalski TL, Chang CH. Quality of life assessment in women with breast cancer: benefits, acceptability and utilization. Health Qual Life Outcomes 2007; 5:24.
20. Folkman S. Stress: Appraisal and Coping. MD Gellman, JR Turner (Edit by) Encyclopedia of Behavioral Medicine. New York: Springer; 2013.
21. Grassi L, Nanni MG, Caruso R. Emotional distress in cancer: screening policy, clinical limitations and educational needs. J Med Pers 2010; 8: 51–9.
22. Pettingale KW, Morris T, Greer S, et al. Mental attitudes to cancer: an additional prognostic factor. Lancet 1985; 1(8431):750.
23. Simonacci F, Bertozzi N, Pesce M, Santi PL, Raposio E. Areola reconstruction: Principles and techniques. Open Med J 2018; 5(1):84–92.
24. Patuzzo S, De Stefano F, Ciliberti R. The Italian code of medical deontology. Historical, ethical and legal issues. Acta Biomed 2018; 89(2):157–64.
25. Abiiro GA, De Allegri M. Universal health coverage from multiple perspectives: a synthesis of conceptual literature and global debates. BMC Int Health Hum Rights, 2015;15:1–7.

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