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Keloid negatively affects body image

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ABSTRACT

Background/Objectives: Keloid is a healing disorder that occurs exclusively in humans. This pathology is considered a benign cicatricial neoplasm, whose physiopathogenesis has not yet completely clarified. Its disfiguring appearance often could potentially cause a disturbance in the patient regarding his/her body image. The objective is to evaluate the impact of keloid on body image.

Methods: 61 patients with keloid in socially exposed regions of the body were included. The participants were submitted to clinical evaluation, composed of anamnesis and physical examination, and answered two questionnaires: the *Body Dysmorphic Symptoms Scale* (BDSS) questionnaire and the Rosenberg Self-Esteem Scale – Unifesp/EPM.

Results: Forty percent of the patients had negative aspects of body image (BDSS score ≥ 6). The scores of these patients on the Rosenberg Scale reached an average of 10.5 ($p < 0.03$).

Conclusions: The presence of a keloid negatively affects body image.

1. Introduction

Skin is a versatile organ endowed with intrinsic functions and physiological interactions with other organs and systems. This organ participates in the interface with the external environment, in social interactions, and interpersonal relationships [1]. Skin wound healing is a vital event for the body to restore the cutaneous integrity. This process consists of several mechanisms and complex signaling cascades, which in harmony and synchronism result in an adequate scar [2]. Perturbations of the balance between synthesis and degradation of collagen, essentially resulting in tissue accumulation, generate fibroproliferative scars, such as keloid [3].

Keloid is a healing disorder that occurs exclusively in humans [3,4]. This pathology is considered a benign cicatricial neoplasm, whose physiopathogenesis has not yet fully clarified [3,4]. The lesion exceeds the limits of the original wound, reflecting the increased metabolic activity of fibroblasts, with excessive production and deposition of extracellular matrix and collagen in the tissue; It does not recede spontaneously and its clinical condition evolves with cicatricial pruritus, pain, and hyperemia.

The prevalence of keloid in socially exposed regions, such as face, ears, neck and anterior chest, is high [4]. The disfiguring appearance of the keloid often can affect the relationship of the patients with their own body perception [5], such as, causing inhibition and embarrassment of public display; or deprive them of physical contact in intimate affective situations [6,7].

Finally, patients with keloid can have negative aspects of body image or body dysmorphic disorder, due to their dissatisfaction with their self-image. This situation could influence or be influenced by the clinical characteristics of the keloid. Therefore, the aim of the present study is to evaluate the impact of the keloid scar on body image.

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2. Methods

This study is primary, analytical, clinical and cross-sectional. It was previously approved by the Research Ethics Committee of the Federal University of São Paulo (Unifesp) by number 0063/2018.

2.1. *Our series*

The present study included patients with keloid located on the face, head, ear, neck, anterior thorax or dorsum, without treatment for at least six months or relapsed after surgical resection for more than six months, both genders, aged between 18 and 65 years old, coming from the outpatient clinic of the Pathological Scars Sector, Discipline of Plastic Surgery (UNIFESP-EPM), in the period from March to September of 2017. The keloid could have endogenous origin, such as acne or chicken pox, or exogenous origin, for example trauma or earring.

Illiterate patients were not included, as well as those with incomplete elementary education and any other intellectual and physical disability that would prevent the completion of questionnaires; also pregnant or lactating patients; those with decompensated systemic, infectious, collagen or autoimmune diseases, and with malignant neoplasms; and patients undergoing any type of previous treatment with chemotherapy. Patients who did not complete all stages of the present study were excluded; as well as those who wished to discontinue their participation in the research, without any prejudice to their care and treatment.

All patients included were duly informed about their voluntary participation for research purposes, and provided their endorsement by reading, understanding and signing the Free and Clarified Consent Term.

2.2. *Clinical evaluation*

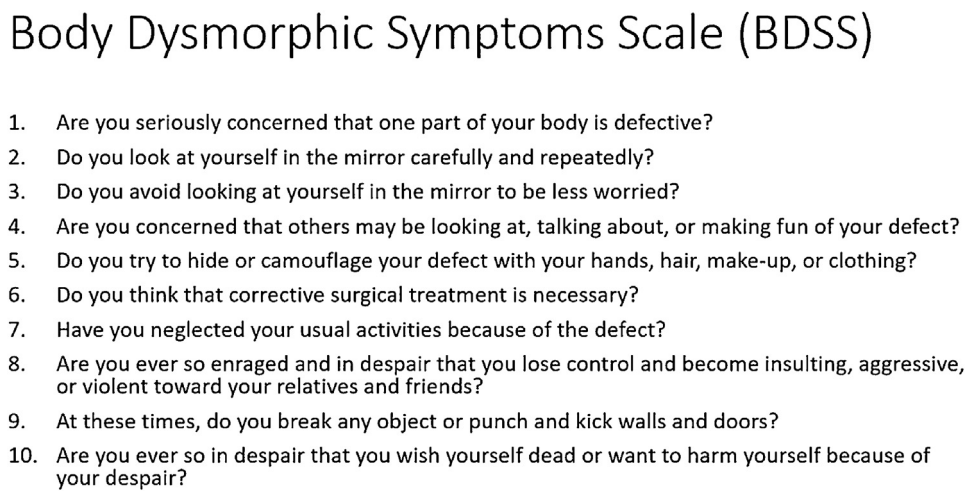
Initially, the subjects underwent clinical evaluation comprised by anamnesis and physical examination, in order to verify their clinical history, as well as data regarding triggering factors and previous keloid treatments.

Each patient underwent evaluation of their single or multiple keloids, observed for pain and pruritus, according to the Visual Analog Scale, graded from 0 to 10, in which 0 means absence of the symptom and 10 the most extreme sensation of the symptom. Scarring hyperemia was evaluated by the reddish appearance of the keloid and by pressing the keloid with fingers for 3 s, obtaining local pallor and returning to the initial coloration.

2.3. *Questionnaires*

The patients then answered the *Body Dysmorphic Symptoms Scale* (BDSS) [8]. The BDSS is a self- assessment scale indicated to measure symptoms of body dysmorphic disease in individuals who seek the Plastic Surgery Service and have excessive concern and anguish regarding their physical appearance. BDSS was developed by Perugi et al. [8], modified by Mühlbauer et al. [9], and validated for the Portuguese language by Ramos et al. [10]. The cut-off point ≥ 6 was associated with a sensitivity of 100% and a specificity of 86%, evidencing the BDSS as a specific instrument for the identification of body dysmorphic disorder symptoms, which can collaborate in the screening of patients during the preoperative period in Plastic Surgery. Thus, scores greater than or equal to six indicate a patient with negative body image symptoms (Fig. 1).

The Rosenberg Self-Esteem Scale [11] was also applied. This tool was validated for the Portuguese language by Dini et al. [12], composed of ten statements, each one with four response options. The sentences are arranged in the four-point Likert Scale format, ranging from "totally agree" to "totally disagree". Each alternative has a value from zero to three, adding a final score from zero to thirty, where zero is the best value for self-esteem and thirty the worst one. The scale has ten closed sentences, five referring to a positive "self-image" or "self-value", and five referring to a "negative self-image" or "self-depreciation" (Fig. 2).


Body Dysmorphic Symptoms Scale (BDSS)

1. Are you seriously concerned that one part of your body is defective?
2. Do you look at yourself in the mirror carefully and repeatedly?
3. Do you avoid looking at yourself in the mirror to be less worried?
4. Are you concerned that others may be looking at, talking about, or making fun of your defect?
5. Do you try to hide or camouflage your defect with your hands, hair, make-up, or clothing?
6. Do you think that corrective surgical treatment is necessary?
7. Have you neglected your usual activities because of the defect?
8. Are you ever so enraged and in despair that you lose control and become insulting, aggressive, or violent toward your relatives and friends?
9. At these times, do you break any object or punch and kick walls and doors?
10. Are you ever so in despair that you wish yourself dead or want to harm yourself because of your despair?

Fig. 1 – Body Dysmorphic Symptoms Scale (BDSS).

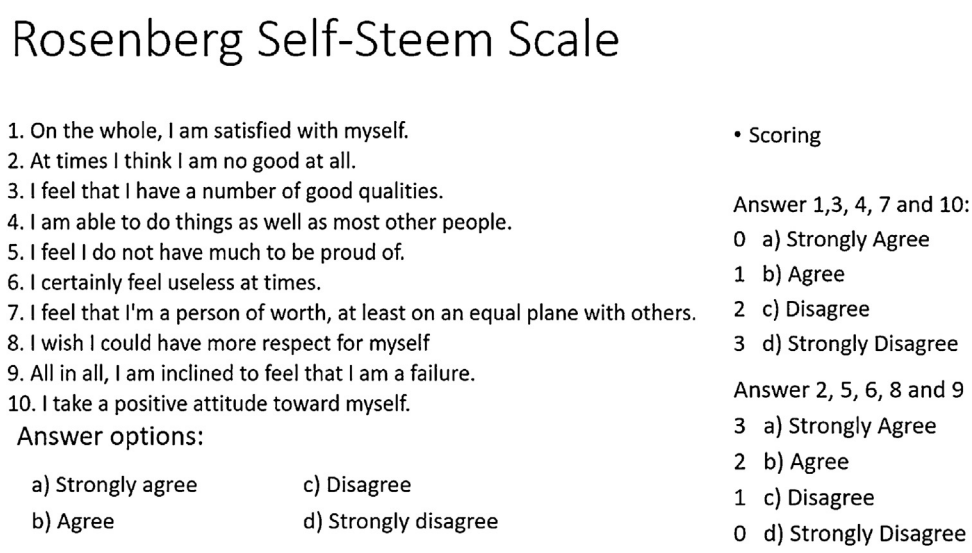


Fig. 2 – Rosenberg Self-Esteem Scale.

The patients were organized into two groups according to their BDSS result. Patients with scores greater than or equal to six were included in Group A (with negative symptoms of body image), while those with a lower score in Group B (no symptoms). Thus, the data of anamnesis, clinical examination, and questionnaires were compared between the groups.

2.4. *Statistical analysis*

Data analysis was performed using SPSS™ (version 21.0). The tests used were based on the type of variable under analysis (qualitative and quantitative) and the size of the casuistry (parametric or nonparametric tests) were the basis of used tests. The parametric Student t-test (age), the nonparametric Mann-Whitney (pain, pruritus and Rosenberg Scale), and the Chi-square test (gender, time of lesion, cause of the scar, personal antecedents, scarring hyperemia, cutaneous phototype and keloid topography) were used for the comparison between the groups A and B. The level of 05% for statistical significance ($p<0.05$) was considered for all analyzed data.

3. Results

A total of 70 patients, 61 were included in the present study. Nine patients were excluded by the selection criteria, with no impairment in their medical treatment and follow-up. Of the 61, 37 (60%) had a score lower than six and 24 (40%) had a score greater than or equal to six in the BDSS questionnaire. Patients from both groups were compared and the results are expressed in Table 1.

Most of the subjects studied had no systemic morbid antecedents. Regarding the clinical symptoms mentioned, it was verified that in the ≥ 6 group, hyperemia was the most prevalent symptom (66%), the mean intensity of pruritus was 7.5 and the average pain intensity was 3.5. In the <6 group, the mentioned symptoms were also the presence of hyperemia in the scar as the most prevalent (62%), followed by the mean intensity of pruritus of 05 and the mean pain intensity of 03. The most prevalent Fitzpatrick phototype was the type IV in both groups. And the region with the highest prevalence of keloid was the ear, followed by the anterior thorax. The Rosenberg Scale assessed the self-esteem of patients with BCDS ≥ 6, with a score of 10.5 and 8 in the group <6, with statistical significance ($p=0.03$).

In the BDSS group ≥ 6, the average age was 31.29 years and in the BDSS group <6, it was 28.84 years. The male gender was the most prevalent. Most of the patients presented lesions for more than 12 months, and the main cause of keloid scars was earring *piercing*, followed by acne.

4. Discussion

Currently, keloid is a pathological scar still without definitive treatment [3,4]. Its pathophysiology is greatly studied, however, no conclusive cause was determined [4]. By following the same line, the prevention, especially for surgical cases, is still imponderable [3,13]. Then, when the patient presents keloid on an exposed topography, for example, the ear or anterior thorax, there is an important impact on their self-image. Therefore, the body image refers to the multifaceted construction of perception, emotion, feelings and thoughts directed to the body itself [11]. The body dissatisfaction generated by the presence of a pathological scar is related to the depreciation of the patient appearance, associated with low self-esteem [5–7].

The present research corroborates other studies found in the literature regarding epidemiological findings about patients with keloid [14–16]. Regarding the etiology of the keloid scar, although the main cause of its occurrence was the use of earring/*piercing*, acne comes in second place. This pathology, on its own, is also an important factor responsible for generating negative body dysmorphic disorder symptoms and disturbances in the self-image of the patients [17,18].

Table 1 – Data regarding anamnesis, clinical examination and questionnaires.

	Groups		p
	A (BDSS ≥ 6, n=24)	B (BDSS < 6, n=37)	
Gender (Male)	12	26	0.11[a]
Average age	31.29 (12.13)	28.84 (10.08)	0.39[c]
Time of lesion			0.65[b]
<6 months	2	2	
6-12 months	0	2	
>12 months	22	33	
Cause			0.17[b]
Acne	7	3	
Trauma	2	3	
Surgery	2	6	
Earring	13	25	
Antecedents			0.08[b]
None	16	27	
Dermatosis	3	7	
Comorbidities	0	2	
Psychomorbidities	5	1	
Hyperemia (Yes)	16	23	0.72[a]
Pain (0-10)	3.5	3	0.69[d]
Pruritus (0-10)	7.5	5	0.23[d]
Fitzpatrick Phototype			0.41[a]
II	2	0	
III	6	7	
IV	11	18	
V	4	12	
VI	1	0	
Keloid location			0.49[a]
Face/head	2	3	
Ear	16	27	
Neck	0	2	
Thorax	6	4	
Back	0	1	
Rosenberg Scale	10.5	8	0.03[d,e]

[a] Chi-square (data described in absolute frequency).
[b] Chi-square with Monte Carlo correction (data described in absolute frequency).
[c] Student t-test (data described in mean and standard deviation).
[d] Mann-Whitney (data described in median).
[e] statistical significance.

Therefore, it would be possible to infer the existence of synergism between the two entities.

The symptoms of the keloid were not statistically significant, despite their prevalence and relevance in the care and treatment of the patient, such as hyperemia, pain and pruritus, since they demonstrated the intensity of the local inflammatory activity in the scar. This data could indicate that a keloid with exacerbation of its inflammatory tissue response would not be an influential or essential factor in the worsening of self-image in patients. In other words, clinical symptoms would not increase or reduce body image depreciation or negatively influence patients' self-esteem, but the presence of the pathological scar on a socially exposed topography would suffice.

A considerable finding is related to the fact that the specific location of the scar did not influence the worsening of the patients' self-esteem, even though all the topographies were socially exposed (p=0.49). This verification, on the other hand, differs from other studies that approached the aesthetic prism of Plastic Surgery [19–21], in which there is a greater relevance of the psycho-morbidities related to the anatomical deformities. For example, rhinoplasty [22], in which negative symptoms related to body image are extremely relevant and should be carefully evaluated before surgery. Therefore, theoretically, it could be said that the visual impact caused by the presence of a keloid is greater in individuals without pathological scar than in the patient itself.

About 40% of the study sample had a score greater than or equal to six (≥6 group) in the BDSS questionnaire. This means that 24 included patients had negative symptoms related to their self-image, due to the presence of the keloid. The mean score on the Rosenberg scale of these patients was 10.5 and compared to the other group (<6 group), whose score was 08, a statistical significance was obtained (p=0.03). Thus, despite presenting negative symptoms of body image and body dysmorphic disorder related to their keloids, it can be inferred that they still had their mental health preserved, since they reached low scores on the Rosenberg Scale. Thus, the presented results could, in theory, imply that the patient with keloid on socially exposed topography could benefit from the treatment of their pathological scar, independently of the associated clinical symptoms. That is, the removal of the keloid, regardless of its topography, could have the potential to improve the patient's negative symptoms. But this information was not verified in the present study, opening a perspective for its elucidation.

In view of this, it would be interesting to incorporate a psychological and emotional support, parallel to conventional treatments, to patients with keloid [23,24], for their psycho-well-being, focusing for example on anxiety and chronic stress [24].

5. Conclusion

Patients with keloid present psychological morbidity with negative self-image symptoms and body dysmorphic disease.

Conflict of interest

None.

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