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EFFECT OF MESOTHERAPY ON THE SUBJECT PERCEPTION OF HAIR CONDITION IN PATIENTS AFTER BARIATRIC OPERATIONS

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Abstract

This study is devoted to assessing the influence of mesotherapy on the subjective perception of hair condition in patients after bariatric surgeries. The work conducted a multi-parametric analysis that revealed a significant influence of the frequency of the procedure on the quality and severity of alopecia manifestations. The obtained results show that patients who received mesotherapy regularly and daily as prescribed by the doctor noted both positive and negative changes in hair condition. Analysis showed that if protocols or individual characteristics of the patient are incorrectly selected, both improvement and deterioration are possible, which is due to differences in skin and hair follicle reactions. It is important to emphasize the need for a personalized approach to therapy, adherence to standard protocols, and informing patients about possible outcomes. The research results highlight the relevance of further scientific developments in the field of safe and effective use of mesotherapy to improve the quality of life of patients who have undergone bariatric surgery.

Keywords: *bariatric operations, mesotherapy, alopecia, hair treatment, prevention*

Introduction

Alopecia, or hair loss, is a common condition affecting millions of people worldwide, significantly impacting their psychological and physical health. The problem becomes particularly relevant for patients who have undergone bariatric surgeries, as such interventions aimed at significant weight reduction can be accompanied by numerous metabolic changes, including in hair follicles (Darlenski R., Mihaylova V., Handjieva-Darlenska T., 2022; Zhang W., Fan M., Wang C., Mahawar K., Parmar C., Chen W., Yang W., 2021).

Modern studies demonstrate the complexity of the pathogenesis of postoperative alopecia. Studies emphasize the role of iron and zinc deficiency in hair loss development after bariatric surgeries (Vranić L., Mikolašević I., Milić S., 2019; El Sayed M. H., Abdallah M. A., Aly D. G., Khater N. H., 2016). Loss of body weight combined with dietary restrictions can lead to a deficiency of essential nutrients, negatively impacting hair health. Additionally, some authors note that changes in hormonal status and metabolic background also play a key role in this process.

In recent years, increasing attention has been paid to non-traditional methods of treating alopecia, such as mesotherapy. This method involves injecting active substances directly into the dermis, which is designed to improve microcirculation, enhance follicle nutrition, and stimulate hair growth. However, current literature reviews show that data on the safety and effectiveness of mesotherapy are ambiguous (Su L.-H., Chen T.-H., 2010; Guo H., Zhu J., Ma Y., Sachin B., Cao D., Tang L., 2017). Further research is needed to clarify the optimal application schemes and possible side effects.

Materials and methods

Analysis of alopecia after surgery was performed depending on the mesotherapy. The study involved 321 patients, who were divided into three groups according to the characteristics being studied. The first group included 115 patients suffering from alopecia after bariatric surgery, which made it possible to assess the influence of this type of surgical intervention on the development and nature of alopecia. The third, control group, consisted of 97 individuals without alopecia symptoms after bariatric surgery. The second group included 109 patients with alopecia who had not undergone bariatric surgery, which made it possible to compare the features of the pathology in the context of other possible causes of alopecia. Before starting the study, all participants signed informed consent in accordance with ethical standards. The subject of analysis was clinical and demographic indicators, as well as the features of alopecia course depending on the presence or absence of bariatric surgery.

Statistical analysis was conducted using StatTech version 4.12.1. Quantitative indicators were assessed for compliance with the normal distribution using the Shapiro-Wilk criterion (if the sample was less than 50) or the Kolmogorov-Smirnov criterion (if the sample was more than 50). In the absence of a normal distribution, the quantitative data were represented by the median (Me) and the interquartile range (Q1-Q3).

To describe categorical data, absolute values and percentages were used, with 95% confidence intervals for shares calculated us-

ing the Klopfer-Pearson method. Comparison of three or more groups for quantitative indicators not subject to normal distribution was carried out using the Kruskal-Wallis criterion. Posteriori comparisons were carried out using the Dunn criterion with a Holm correction.

Pearson's chi square criterion was used to compare fractions in multi-field conjugate tables. In the case of multiple comparisons, the posteriori analyses were also conducted using the Pearson chi square criterion with a Holm correction. Statistical significance was established at a level of $p < 0.05$.

Research results

The conducted study analyzed patients' subjective assessment of hair condition after therapy, particularly mesotherapy, and revealed a significant influence of the frequency of this procedure on the perception of treatment results. The statistical analysis presented in the table shows clear differences between groups of patients who did not receive mesotherapy but received it periodically or daily.

Among patients who did not use mesotherapy, 100% noted no significant changes in hair condition, while 16.1% indicated some improvement, but 25.7% and 30.3% of respondents reported significant deterioration or sharp deterioration, respectively. For comparison, patients who received mesotherapy sometimes reported improvement: 25.8% noted significant improvement, 22% – improvement, but the proportion of those who did not notice changes (28.8%) or noted deterioration (31.4% slightly worse and 30.3% sharply deteriorated) also remained.

The greatest changes were observed in patients who received mesotherapy daily according to the doctor's instructions: 58.1% reported significant improvement, and 67.4% reported improved hair condition. Despite this, some patients still indicated no significant changes (46.2%) and even deterioration (42.9% slightly worse, 39.4% sharply deteriorated).

Theoretically, such responses can be attributed to a number of factors: patient expectations based on various information about the procedure, the initial condition of hair and scalp, individual reactions to injections

and the medications used, and methods and techniques used in the procedures. The data indicate that more intensive treatment can bring improvement, but also does not ex-

clude the possibility of negative experiences, which are related to the patient's individual characteristics and the professionalism of performing procedures.

Table 1. Analysis of mesotherapy's impact on subjective perception of treatment

In-dicators	Sections	Due to the treatment, my hair looked better						p.
		No.	significantly better	better	practically identical	slightly worse	sharply deteriorated	
Mesotherapy	no	108 (100.0).	10 (16.1)	15 (10.6)	13 (25.0)	9 (25.7)	10 (30.3)	< 0.001*
	sometimes	0 (0.0)	16 (25.8)	31 (22.0)	15 (28.8)	11. (31.4)	10 (30.3)	P _{N/A} – significantly better < 0.001
	daily according to the doctor's instructions	0 (0.0)	36 (58.1)	95 (67.4)	24 (46.2)	15 (42.9)	13 (39.4).	P _{N/A} – better < 0.001 P _{N/A} – practically the same < 0.001
	no	0 (0.0)	22 (35.5)	19 (13.5).	15 (28.8)	21 (60.0)	17 (51.5).	P _{N/A} – slightly worse < 0.001
	yes	0 (0.0)	33 (53.2)	76 (53.9)	20 (38.5)	20 (57.1)	18 (54.5)	P _{N/A} – sharply worsened < 0.001
	no	0 (0.0)	28 (45.2)	63 (44.7)	31 (59.6)	15 (42.9)	15 (45.5)	P _{better} – sharply deteriorated = 0.034

* – differences in indicators are statistically significant ($p < 0.05$)

Considering the variability of reactions, the results emphasize the importance of a personalized approach to alopecia therapy. It is necessary to inform patients about possible results and side effects of mesotherapy, assess the condition of hair and the level of satisfaction at each stage of treatment. These data indicate the need for further study of the psychosomatic aspects of alopecia treatment and the development of optimal therapy programs, taking into account the expected outcome and the need to support patients throughout the treatment process.

Thus, the study demonstrates that while mesotherapy can be a powerful tool in the treatment of alopecia, its effectiveness largely depends on how individualized the approach to each patient is, which should be the focus of trichologists and dermatologists to ensure optimal therapeutic outcomes.

Conclusion

Against the backdrop of the increasing number of bariatric surgeries, the number of patients facing the problem of alopecia is also increasing. There is still no universal corrective approach to the therapy of post-operative hair loss, making this direction extremely relevant for modern dermatologists and trichologists. The role of mesotherapy in treating alopecia in such patients is of significant interest in the medical community.

A study aimed at studying the effect of mesotherapy on hair condition in patients after bariatric surgery can make a significant contribution to understanding its role in the prevention and treatment of this condition. It will allow for the creation of more accurate methodological recommendations, the selection of optimal treatment approaches, and the formation of a more personalized approach in trichology.

Thus, this research is not only relevant but also has significant potential for practical application. It can serve as a basis for developing new clinical strategies aimed at improving the quality of life of patients who have undergone bariatric surgery, and allows for ensuring more quality and safe treatment outcomes.

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