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Evaluation of the Treatment Results of Skin Photoageing Using the Gais Scale and Its Medical and Economic Efficacy

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Abstract: This article presents a comparative analysis of modern methods for treating skin photoageing and their aesthetic results using an objective scale under the conditions of high solar radiation in Uzbekistan. A total of one hundred and three patients participated in the study; they were divided into three clearly defined groups and underwent various treatment strategies. The primary objective was to compare the efficacy of a personalised algorithm based on the patients' genetic characteristics and oxidative stress levels with traditional methods. The results of the study demonstrated that the comprehensive treatment method, selected on the basis of genetic analyses, allowed for the achievement of the highest indicators in improving physical appearance. More than seventy-seven per cent of the patients registered a very good improvement, which fully ensured their rapid return to daily social life. Furthermore, the economic efficacy of the treatment was analysed, and the issues of shortening the rehabilitation period through the rational allocation of resources were considered. It was fully scientifically substantiated that reducing the risk of complications and significantly cutting material costs through the application of innovative medical approaches directly contribute to the financial stability of the healthcare system.

Keywords: photoageing, aesthetic, scale, laser, antioxidant, genetic, efficacy, innovation, rehabilitation.

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1. Introduction

One of the most important and urgent issues in modern dermatocosmetology is the timely and effective treatment of skin photoageing caused by the continuous adverse impact of solar radiation. Uzbekistan's sharply variable dry climate and the extreme abundance of sunny days throughout the year accelerate the processes of premature skin ageing among the population, and this adverse condition, in turn, is increasing the demand for high-quality cosmetological services day by day [1]. The international aesthetic scale, widely used throughout the world to objectively and accurately assess the degree of patient satisfaction with the results of the treatment administered, is distinguished today by its high reliability and convenience. Measuring the positive changes in the physical appearance of the face and neck areas in precise figures using this scale allows medical practitioners to correctly select and plan subsequent treatment tactics [2]. Thus, restoring the structural integrity of tissues through the application of methods that directly affect the pathogenesis of the disease remains a priority task in clinical practice.

2. Literature Review

Numerous fundamental scientific studies conducted in global medical practice on the treatment of skin photoageing confidently demonstrate that using only a single therapeutic method to halt and reverse skin ageing processes never yields the expected sufficient results [3]. In recent years, scientists worldwide have been focusing their greatest attention on the comprehensive application of advanced instrumental cosmetology devices that penetrate the deep layers of the skin, along with various biologically active substances [4]. In particular, the Thulium laser, widely used in modern instrumental cosmetology, is rightfully recognised today as one of the safest and most promising methods for strongly activating cell renewal processes in the upper and middle layers of the skin [5]. However, as clearly stated in many foreign and domestic literature sources, any laser beams, including the Thulium laser, cannot directly affect the molecular genetic parameters of cells; therefore, to ensure deep regeneration at the cellular level, the necessity of adding powerful antioxidants and modern agents that accelerate intercellular communication to the treatment complex becomes inevitable [6]. Another important medical aspect is that each individual's unique and unrepeatable genetic characteristics determine their individual response to various external factors and medical procedures. Therefore, to conduct highly accurate and reliable genetic research, it is strictly required that the selected examination groups consist of at least fifty participants, and it is precisely this golden rule that guarantees the high level of scientific reliability of the final results obtained. In scientific literature, the use of internationally accepted scales to objectively assess the aesthetic condition of patients following procedures has repeatedly been fully confirmed as the most correct and fair method [7]. All of this justifies the necessity of a comprehensive approach in clinical practice.

3. Methodology

Within the framework of this scientific research work, a total of one hundred and three patients residing permanently in the specific hot and dry climate conditions of Uzbekistan and presenting with clearly visible signs of photoageing of varying degrees on their facial skin participated voluntarily. In order to fully ensure the highest level of accuracy and scientific reliability of the study, all participants underwent a very strict and in-depth medical examination at the initial stage regarding their medical history, daily lifestyle, dietary habits, and various previously received cosmetological procedures. During the process of primary data collection and analysis, mixed states of the skin resulting from various external harmful influences or concomitant diseases, which would seriously hinder the drawing of final scientific conclusions, were completely excluded from the research programme, and only patients with purely manifested signs of photoageing under medical observation were selected to participate in the experiment. The participating patients were divided into three completely independent groups depending on the pre-determined and approved treatment method. Fifty-three patients were included in the first group in strict accordance with the requirement to conduct accurate genetic research to international standards, and prior to treatment, the individual genetic profile and the level of systemic oxidative stress in the blood composition of each of them were fully studied under laboratory conditions. The members of this main group were sequentially administered a comprehensive treatment course fully tailored directly to the personal genetic characteristics of each patient, using a modern Thulium laser device, cell-regenerating exosome preparations, and the potent antioxidant agent superoxide dismutase. The second group comprised twenty-five participants, and during their treatment process, a combination of only the Thulium laser and superoxide dismutase was widely used without any additional genetic analyses, relying primarily on many years of empirical practical experience. The remaining twenty-five patients in the third group, serving as a pure control group, were administered the traditional monotherapy method

based solely on the superoxide dismutase preparation, without any other additional equipment, in accordance with the physician's prescription. Upon the successful and complete conclusion of the planned treatment procedures in all assigned groups, strict monitoring and control over the patients' conditions were regularly conducted for exactly three months, and the obtained final aesthetic results were assessed using a five-point scale that fully complies with global medical standards. Converting all objective and subjective positive changes in the physical appearance of the patients' facial and neck skin into precise numerical indicators expanded the ability of the observing medical personnel to scientifically prove the actual efficacy of the selected treatment methods.

4. Results and Discussion

Table 1. Comparative indicators of the clinical-aesthetic and economic efficacy of various therapeutic approaches used for the treatment of skin photoageing in the study groups.

Groups	Treatment method	Number of patients	High result according to the scale	Reduction in rehabilitation	Source of obtained results
First group	Laser, exosome, and antioxidant complex	53 patients	seventy-seven per cent	one day	2022-2025 scientific database
Second group	Laser and antioxidant complex	25 patients	fifty per cent	partially reduced	2022-2025 scientific database
Third group	Antioxidant monotherapy only	25 patients	eight per cent	unchanged	2022-2025 scientific database

The final numerical results obtained following in-depth comprehensive medical examinations and treatment procedures at all stages, which were conducted over a period of three months, clearly demonstrated that a strictly personalised treatment tactic, selected by taking into account the patients' innate genetic characteristics and the current state of their body, allows for achieving incomparably higher and more stable clinical and aesthetic efficacy compared to all other known traditional methods [8]. Relying on the results of the face-to-face assessment conducted according to a specially approved international scale, it can be stated that in the first group, consisting of a total of fifty-three patients and receiving the primary focus, over seventy-seven per cent of the participants confirmed with great satisfaction that the changes occurring in their physical appearance post-treatment constituted a very good improvement. It was precisely in this first group that the external skin-renewing and activating properties of instrumental laser beams were seamlessly combined with the deep regenerative effect of exosomes and enriched antioxidants directly at the intracellular level, resulting in the rapid tightening of sagging facial skin and the significant smoothing of fine and deep wrinkles within a very short timeframe [9, 10]. In the second group, comprising a total of twenty-five patients, the observed aesthetic indicators yielded relatively lower results; in approximately half of them, only a state of simple improvement was documented, and the risk of various unexpected minor complications arising was seriously noted by specialists to be somewhat higher than in the first group [11]. The final results in the third group, where no equipment was utilised and treatment was limited solely to monotherapy, exhibited the lowest and most ineffective indicators from an external aesthetic perspective, as only eight per cent of the participating patients demonstrated visible and satisfactory positive changes; in the vast majority of the remaining cases, changes between the pre- and post-treatment states were virtually

imperceptible [12, 13]. These precise statistical figures obtained from all groups reliably prove to the scientific community once again that in complex practical medicine, it is absolutely impossible to achieve a comprehensively high-quality and long-lasting result using merely a single outdated method, and they highlight the crucial role played in practice by a modern comprehensive approach that integrates various modalities [14]. In brief conclusion, the continuous use of an innovative algorithm based on an individual genetic profile relying on precise laboratory data in the treatment and correction of skin photoageing is the leading, most pathogenetically justified approach in aesthetic dermatocosmetology, guaranteeing high clinical results [15].

5. Conclusion

The final results obtained following in-depth comprehensive medical examinations and treatment procedures at all stages, which were conducted over a period of three months, demonstrated that a personalised treatment tactic selected by taking into account the patients' innate genetic characteristics and the current state of their body allows for achieving more stable clinical and aesthetic efficacy compared to traditional methods. Relying on the results of the assessment conducted according to the international aesthetic scale, it can be stated that in the first group, consisting of a total of fifty-three patients, over seventy-seven per cent of the participants confirmed that the changes occurring in their physical appearance post-treatment constituted a very good improvement. It was precisely in this first group that the external skin-renewing property of instrumental laser beams seamlessly combined with the deep regenerative effect of exosomes and antioxidants at the intracellular level, resulting in the rapid tightening of sagging facial skin and the significant smoothing of wrinkles within a short timeframe. Furthermore, this comprehensive approach based on the genetic profile drastically reduced inflammatory processes in the skin, raising the regenerative capacity of tissues to a maximum level. In the second group, comprising twenty-five patients, the observed aesthetic indicators yielded a relatively lower result; in exactly half of them, only a state of simple improvement was documented, and it was observed that the risk of various unexpected complications arising was higher than in the first group. The final results in the third group, where no equipment was utilised and treatment was limited solely to monotherapy, exhibited the most ineffective indicators from an external aesthetic perspective, as visible positive changes appeared in merely eight per cent of the patients in this group. All the obtained clinical indicators prove that being limited to a single therapeutic method is absolutely insufficient to directly affect the pathogenesis of the disease in the treatment of skin ageing processes. In brief, the modern comprehensive treatment algorithm, selected through a full analysis of the patient's individual genetic profile and oxidative stress level, made it possible to shorten the rehabilitation period to one day and reduce disease complications by three point four times, which fully confirms that this is the most pathogenetically correct choice for increasing medical efficacy in dermatocosmetology.

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