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Rosacea is More than Just a Red Face: Microbotox's Role in Minimizing Enlarged Facial Pores for a Rosacea Patient

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Abstract

Enlarged facial pores are a cosmetic concern and a prominent feature of skin aging that impacts patient quality of life. Microbotox has emerged in multiple studies as a solution for reducing pore size and improving skin texture. A case of 29 years old female with papulopustular rosacea and enlarged skin pores was reported. From the patient's anamnesis, it was found that the patient has been complaining of a reddish patch with pimples on the nose and both cheeks for the past 4 years. The patient has also had enlarged pores on both cheeks for the past 3 years. On dermatologic state there were erythematous macule, erythematous papules and enlarged pores on both of the cheek. Global Flushing Severity Score (GFSS) was 3, Investigator's Global Assessment (IGA) of Rosacea Severity for papules and pustules is grade 2 and erythema grade 2. Visual Assessment for Pore was 6. Patient received a single session of microbotox. Dermoscopy examination showed linear vessels (telangiectasia), a pustule, and also follicles filled with sebum. Follow up of the patient was done for 6 weeks. Patients reported a decrease in issues such as flushing, papules, pustules, and erythema. A noticeable improvement in pore size was also observed. This action can be repeated every 3 months to maintain clinical improvement and good skin texture. Botulinum toxin exhibits a satisfying level of efficacy and safety in rosacea treatment. A single microbotox session proves to be a safe and effective approach for reducing facial pore size, along with notable improvements in skin texture.

Introduction

Rosacea is a prevalent, long-lasting inflammatory skin condition that mostly impacts the skin in the middle part of the face and seldom affects the skin on the neck and forehead. Rosacea is derived from the Greek term that means "resembling a rose", and it refers to the primary symptoms of recurring flushing, either on its own or accompanied by temporary or lasting redness. Medically, the condition is distinguished by long-lasting redness (temporary redness), continuous redness, visible blood vessels, small raised bumps, pus-filled bumps, and thickening of the skin, often accompanied by a sensation of burning, stinging, or even severe headache (skin-related rosacea) by Del Rosso et al. (2013). The origin and underlying mechanisms of rosacea are not well comprehended, resulting in an inadequate therapy for the condition (Steinhoff et al., 2011). Current treatment approaches mostly focus on managing the

visible signs and symptoms of the illness, rather than addressing the root reasons or preventing its occurrence.

Indications of the advanced phase of rosacea encompass enduring intense redness and many expanded veins. Fibroplasia, the excessive development of tissue, is an initial indication of the advanced stage, leading to the enlargement of pores (Babadjouni et al., 2022). Occasionally, this might lead to a face look like the texture of an orange peel. Rosacea is recognized to have detrimental impacts on the overall well-being and psychological state of those experiencing mild, moderate, or severe erythema (Kim et al., 2013). The influence on self-perception and emotional, social, and overall wellness is notably greater in those with rosacea (Ren et al., 2022).

Enlarged facial pores are a prevalent cosmetic skin issue and a noticeable aspect of skin aging, characterized by an uneven skin texture (Rho & Gil, 2021). Despite not being classified as an illness, dermatologists have not given it much attention in recent years (Hanna et al., 2021). The importance of this issue goes beyond superficial consequences, as it has been shown that persons who value beauty highly may suffer from psychological anguish caused by the presence of enlarged facial pores. Kim et al. (2013) have established the size range of enlarged pores to be between 0.3 and 0.6 square millimeters. On the other hand, skin analyzers define pores as any circular opening of a hair follicle that is greater than 0.02 square millimeters. Research indicates that the development of larger face pores is mainly linked to the overproduction of sebum, decreased suppleness of the surrounding tissues, and a rise in the size of hair follicles (Ahmed & Nofal, 2021).

Microbotox involves injecting several small droplets of diluted onabotulinum toxin A into the top layer of the skin. It has only been utilized in a single study to reduce pore size and enhance skin texture (Park et al., 2018). Multiple research and case reports have documented that the administration of botulinum toxin type A (BTX-A) leads to notable amelioration in symptoms such as flushing, erythema, and facial rejuvenation.

Case Report

A case involving a 29-year-old female who reported enlarged pores on both cheeks, a concern she has had for the past 3 years, without experiencing any itching or pain. She observed an increase in the reddish patches during activities such as exercise, consuming hot food or beverages like tea and soup, and in hot weather. However, these patches would subside after several hours. Approximately two years ago, the patient sought dermatological consultation, receiving a diagnosis of papulopustular rosacea. Subsequent adherence to a prescribed skincare regimen, encompassing facial cleanser, morning sunscreen (SPF 30), hyaluronic acid 1% + niacinamide 10% applied bi-daily, and ceramide gel moisturizer applied morning and night, ensued. Additionally, the patient introduced oxymetazoline nasal solution 0.05% during episodes of erythematous patches (Shanler & Ondo, 2007). Despite meticulous therapeutic measures, the patient experienced a progressive enlargement of pores on both cheeks, resulting in a cutaneous texture resembling that of an orange peel. Interventions, inclusive of topical applications, laser therapy, and microdermabrasion under the auspices of the dermatovenereologist, failed to yield substantive improvements. Clinical examination revealed erythematous macules, red papules, and enlarged pores, classifiable under Fitzpatrick type III. Dermoscopic examination found telangiectasia, forming incomplete polygons, a pustule, and follicular sebaceous accumulation.

Microbotox treatment, administered intradermally at a concentration of 20 IU/ml of BTX-A, was instituted alongside the continuation of established rosacea skincare practices. The patient underwent a systematic microbotox procedure, commencing with facial cleansing followed by the application of 10% lidocaine cream for 45 minutes to induce topical anesthesia. Subsequently, injection points were meticulously identified and marked on bilateral facial

regions, maintaining a consistent 1 cm spacing. Following thorough disinfection with a 70% alcohol swab, microbotox injections were administered using a 34G needle with a concentration of 20 IU/ml of BTX-A. The injections were meticulously executed, targeting the superficial intradermal layer until the emergence of a papule. Post-procedure directives included instructions for the patient to refrain from facial manipulation, maintain an upright posture for at least 4 hours, and avoid the application of makeup or other facial products for a minimum of 24 hours. A follow-up procedure was slated for repetition three months hence.

Figure 1. Injection point design, with 1 cm spacing

After a six-week follow-up, a reduction in pore size on both cheeks was discerned, concomitant with satisfaction expressed by the patient. Facial redness with a stinging sensation was reported three days post-microbotox, subsequently ameliorating within two weeks, coupled with a decrease in the frequency of erythematous patches and an absence of facial muscle paralysis.

The initial clinical evaluation, preceding microbotox treatment, manifested as follows: Investigator's Global Assessment (IGA) of Rosacea Severity—Papules and Pustules: Grade 2, Presence of Erythema: Grade 2; Patient's Self-Assessment (PSA): Mild Impact (Grade 2); Visual Assessment for Pore: 6; Dermatology Life Quality Index (DLQI): 3. Post-microbotox, subsequent assessments demonstrated marked improvement: Global Flushing Severity Score (GFSS): 2, IGA of Rosacea Severity—Papules and Pustules: Grade 1, Presence of Erythema: Grade 1; PSA: Substantial Enhancement (Grade 1); Visual Assessment for Pore: 4; DLQI: 2. The observed progression in physical examination details underscores the efficacy of microbotox treatment, substantiating substantial enhancement in the patient's cutaneous health and overall quality of life. Dermoscopy at the six-week follow-up revealed a reduction in redness, telangiectasia, and the obliteration of pores occluded with keratotic plugs

Result and Discussion

Enlarged facial pores are a prevalent cosmetic skin issue and a noticeable aspect of skin aging, characterized by an uneven skin texture. Research indicates that the development of larger facial pores is mainly linked to an overproduction of sebum, decreased flexibility of the surrounding tissues supporting the pores, and an increase in the size of hair follicles. Multiple reports and studies have indicated that rosacea patients may experience the development of larger skin pores, while the underlying process remains unclear(Zhang et al., 2021;Bernstein & Kligman, 2008). Qiu et al. (2023) research highlights the role of inflammaging (the low-grade, asymptomatic, and persistent chronic inflammation) as the underlying cause of enlarged pores.

Microbotox is used clinically to improve the tone, the texture of the skin, as well as decreasing flushing, enlarged pores, and seborrhea. The study by El Attar & Nofal (2020) indicated that

microbotox resulted in improvement for 87.2% of the patients. These individuals expressed high satisfaction with the swift and significant response to a single microbotox session, particularly in terms of reducing pore size. In this particular case report, the same dosage of microbotox solution was administered as employed in the study conducted by El Attar & Nofal (2020). As the result, within 6 weeks of follow up, the Visual Assessment for Pore was reduced from 6 to 4.

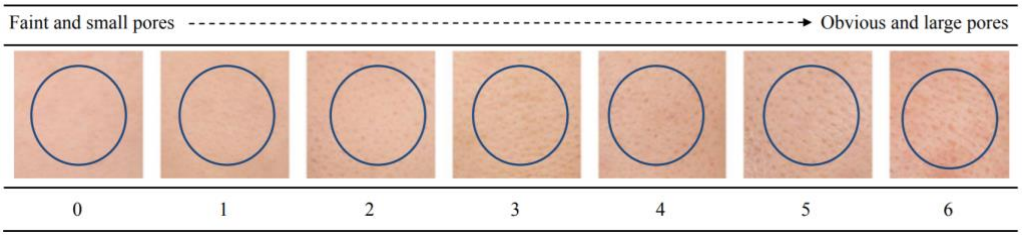

Figure 2. patient condition before and after the microbotox treatment

The precise process by which microbotox reduces face pores has not been completely elucidated. One potential rationale might be attributed to the established neuromodulatory properties of Botulinum toxin, which inhibits the action of acetylcholine. The erector pili muscle is activated by the sympathetic/parasympathetic nervous system. Botulinum toxin locally inhibits the parasympathetic response on the erector pili muscle and sebaceous glands. As a result, it increases the overall sympathetic response, which causes the erector pili muscle to contract more forcefully and reduces the size of the pores. A group of researchers conducted a thorough analysis of previous scientific literature to examine the potential mechanisms involved. They identified several important substances, including acetylcholine, vasoactive intestinal polypeptide, vascular endothelial growth factor, substance P, calcitonin gene-related peptide, and transient receptor potential channel vanilloid family member 1 receptors.

Although there is a wide range of drugs and therapies available to minimize face pores, there is a lack of scientific research that provide proof for their effectiveness. Due to the multiple potential reasons of enlarged pores, it is necessary to tailor therapy approaches to each patient's specific needs. Various methods have been employed to treat enlarged facial pores, such as topical retinoids, Botox, radiofrequency, photodynamic therapy, erbium laser, 1440 nm diode laser, and hair removal laser. The patient had a microbotox therapy technique and obtained a favorable outcome in this instance.

The microbotox technique did not result in any significant or enduring adverse effects. Shah (2008) conducted a research which found that 6 out of 20 individuals had pain and moderate erythema that lasted for 48 hours. The present study did not reveal any cases of facial paresis, which is a possible consequence that might occur when microbotox is injected deeply into the

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face muscles. The patient experienced erythema and a tingling feeling on the face approximately three days following the microbotox procedure.

The initial dermoscopy examination revealed the presence of linear veins (telangiectasia) that formed incomplete polygons, along with a pustule. Additionally, there were follicles with a keratotic plug. The holes correspond to the dilated aperture of the hair follicles, which might be blocked by yellowish keratotic plugs or penetrated by hair. During the follow-up, there was seen a decrease in redness and telangiectasia, as well as the elimination of pores blocked by keratotic plugs. Utilizing dermoscopic examination can enhance the precision of evaluating patients and verify the effectiveness of microbotox for persistent enlarged facial pores that persist for several months following a single session (El Attar & Nofal, 2020).

Figure 3. dermoscopy examination of before and after the microbotox treatment

Conclusion

A case of 29 years ‘old female with papulopustular rosacea with enlarged skin pore was reported. Botulinum toxin exhibits a satisfying level of efficacy and safety in rosacea treatment. A single microbotox session proves to be a safe and effective approach for reducing facial pore size, along with notable improvements in skin texture.

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