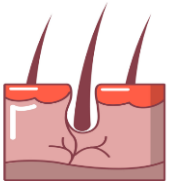

COSMODERM TIMES

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Dear Doctor,

Greetings from Micro Labs. We are happy to bring you "COSMODERM TIMES" which contains latest and interesting news in the field of Dermatology.

This issue contains:

1. Serum indoleamine 2,3-dioxygenase levels and diagnostic efficacy in rosacea patients
2. Thermography as a Diagnostic Technique in Asymptomatic or Evolving Onychomycosis
3. Cold Atmospheric Plasma Reduces Sebum Production in Human Facial Skin by Inhibiting Lipogenesis and Proliferation of Human Sebocytes
4. A case report on the treatment of periorbital syringomas with intradermal botulinum toxin A monotherapy vs carbon dioxide laser.

Should you require any article or, medical information, please feel free to contact us medicalservices@microlabs.in

Looking forward to your valuable feedback.

Best Regards,

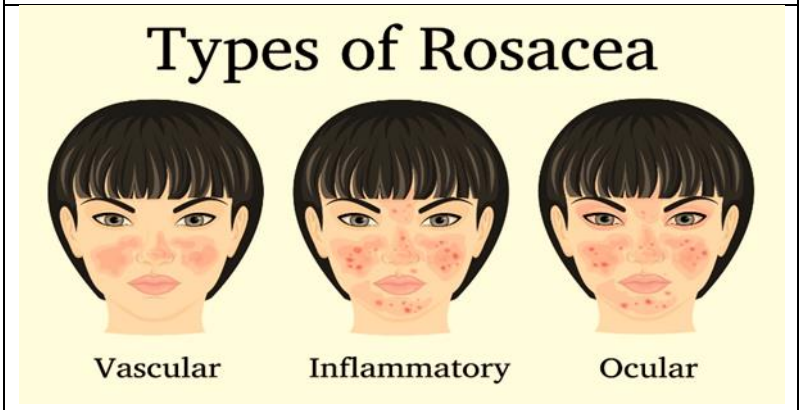
Medical Team, Micro Labs Limited

Serum indoleamine 2,3-dioxygenase levels and diagnostic efficacy in rosacea patients

Introduction

Rosacea is a chronic inflammatory skin condition that mostly affects the centrofacial region. Rosacea is most common in individuals aged 20 to 50. A variety of risk factors for rosacea including diet, smoking, alcohol intake, and stress [1]. Flushing, face erythema, inflammatory papules, pustules, and telangiectatic lesions are all symptoms. Rosacea is more common in women than in males, and the first symptoms are generally redness. Rosacea has four kinds, the most frequent of which are papulopustular and erythematotelangiectatic rosacea. Indoleamine 2,3dioxygenase(IDO) catabolizes tryptophan to kynurenine and other metabolites. It becomes activated in response to inflammatory stimuli and has immunosuppressive properties. Although the cause of rosacea is unknown, vascular dysregulation and chronic inflammation are the most probable causes. IDO levels have been found to be elevated in various chronic inflammatory dermatological illnesses, including psoriasis and lichen planus. The purpose of this study is to determine the association between IDO and rosacea and whether there is a link between disease severity and IDO [2].

Fig 1: Types of rosacea



Methods

Fifty-two rosacea patients and 29 healthy participants were recruited. The patients were classified based on their illness severity stage, time period, and subtype. The enzyme linked immunosorbent assay was used to assess IDO levels in serum. Subjects' fasting blood samples were taken in tubes and centrifuged at 3000 rpm for 10 minutes to obtain serum. Student's t and Mann-Whitney U tests were used to compare data between the rosacea and control groups. Pearson correlation and Spearman correlation coefficients were used to analyse the relationships between variables.

Results

The rosacea group had 52 individuals (36 females and 16 men) while the control group included 29 healthy volunteers (21 females and 8 males). Serum IDO levels in female rosacea patients were greater than in healthy Female controls (P<0.001). When the parameter's diagnostic value was examined, it was found that the serum IDO level had a high sensitivity (83.3%) and specificity (76.1%), with a cutoff value of 47.1 ng/mL for female rosacea patients. There was a statistically significant difference in age between the groups (P<0.001), but no difference in gender was found (P = 0.760).

Although there was no significant difference in serum IDO levels between male and female rosacea patients, serum IDO levels were lower in healthy females than in healthy men (P = 0.019). Serum IDO levels in female rosacea patients (60.0 ±17.8 ng/mL) (n = 36) were substantially higher than in healthy females (n = 21) (41.7± 9.0 ng/mL) (P< 0.001) (fig 2).

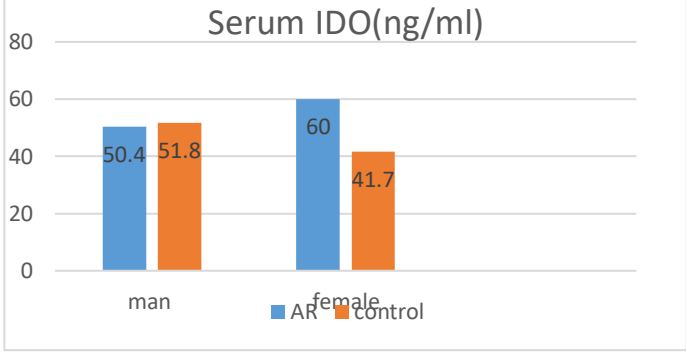


Fig 2: Comparison of serum IDO levels between rosacea patients and control groups according to gender. *Significantly different from healthy females (*P* = 0.019), **Significantly different from healthy females (*P* < 0.001). IDO: Indoleamine 2,3-dioxygenase

Discussion:

In a research of 1066 rosacea patients, emotional stress was shown to be the second most common cause, with a frequency of 79%, after sun exposure (81%) [(2)].

Psoriatic plaques are made up of capillary angiogenesis and immune cell infiltration. Eminel et al. previously demonstrated that IDO and kynurenine expression was considerably higher in psoriatic plaques [(3)].

The current study's findings indicate that serum IDO levels can help in the diagnosis of rosacea, particularly in female patients. Badieyan ZS et al finds The importance of this enzyme in rosacea etiopathogenesis is highlighted in a study that discussed the probable effect of several therapeutic techniques in rosacea by inhibition of IDO [(4)].

Conclusion:

IDO levels have been reported to rise in rosacea patients. IDO may be a supportive parameter in the diagnosis of rosacea due to the high specificity and sensitivity shown, particularly in female patients.

Due to the high specificity and sensitivity shown, particularly in female patients, IDO (Indoleamine 2,3 dioxygenase) may be a supporting parameter in the diagnosis of rosacea.

Reference

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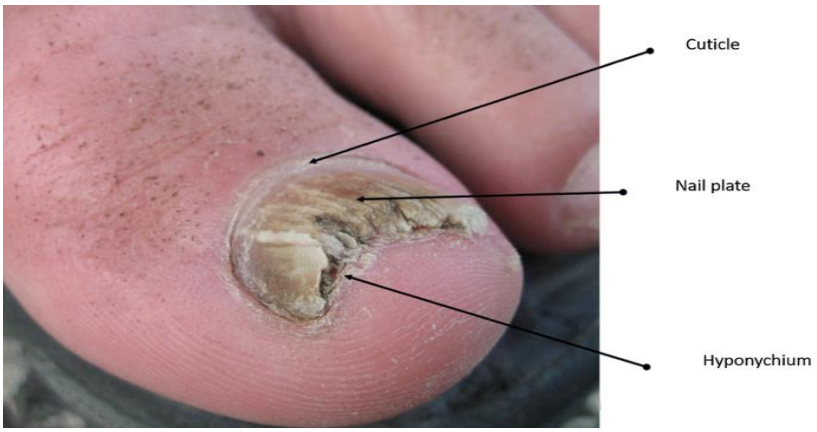
Thermography as a Diagnostic Technique in Asymptomatic or Evolving Onychomycosis

Introduction

Dermatophytes, non-dermatophytes, and yeasts cause onychomycosis, a common fungal infection of the nail. Older age, trauma, diabetes, immunosuppression, and a history of nail psoriasis or tinea pedis are also risk factors. Nail discolouration, subungual hyperkeratosis, and onycholysis are all possible clinical manifestations [(1)]. The nail unit is vulnerable to fungal infection because it lacks strong cell-mediated immunity. Fungi can cause changes in the colour and thickness of the nail plate, as well as irritation, discomfort, and, in rare cases, onycholysis. Thermography is a non-invasive technology that measures the heat radiated by an object, structure, or body surface and generates a graphical depiction of the surface temperature. The objective of this research is to apply thermography to define the standard foot temperature in young individuals and screen this group to see whether this technology might be used as a new diagnostic approach in asymptomatic or early onychomycosis [(2)].

Fig1:Onychomycosis



Methods

All participants were randomly invited to take part in the study and data were obtained from 214 feet of adults aged 18-31 years, with a slightly higher proportion of young participants. An FLIR E60 BX camera was used to capture the thermographic pictures. Sampling was carried out in accordance with the protocol described elsewhere for effective onychomycosis sample collection. The nail was sterilized with 70% alcohol before a sample was collected with sterile nail trimmers. The material was cultured on a Petri dish and examined under a microscope. The following factors were included in the study: age, gender, temperature, and infecting organism. IBM-SPSS Statistics version 25 was used for statistical analysis. To evaluate the association between two categorical variables, the Chi-square test of independence was implemented.

Results

Statistical examination of the thermography pictures reveals the presence of fungi in 14% (30) of the first toenails, with yeasts (8.9%; 19) appearing more frequently than dermatophytes (5.1%; 11) in these nails. The temperature variable data collected at the five reference points, as well as the mean temperature variable produced from this data, were examined. In general, research utilising the variable of fungi for women revealed that the means of positive cases (n = 14) are slightly higher than the means of negative cases. Analysis of total fungi in males revealed similar mean temperatures in positive (n = 16) and negative instances. The combined analysis findings (Table 1) revealed statistically significant differences ($p \leq 0.05$) in all points and the total mean in dermatophytes (n = 11). The combined analysis findings (Table 1) demonstrate significant differences ($p<0.05$) at several places and in general, as shown in the overall mean in yeast infection.

Table 1:Relation of results of thermography variables and prevalence of dermatophyte and yeast infection

Thermography (°C)	Dermatophytes				Yeast			
	Mean (Standard Deviation)		Comparison of Means		Mean (Standard Deviation)		Comparison of Means	
	Positive (n = 11)	Negative (n = 203)	ES	P-V	Positive (n = 19)	Negative (n = 195)	ES	P-V
Temperature P-1	29.0 (±4.3)	31.0 (±3.3)	0.016	0.031 (*)	32.1 (±2.2)	30.8 (±3.5)	0.012	0.056 (†)
Temperature P-2	28.7 (±4.5)	30.8 (±3.4)	0.017	0.027 (*)	32.0 (±2.1)	30.6 (±3.6)	0.014	0.043 (*)
Temperature P-3	27.7 (±3.6)	29.8 (±3.5)	0.017	0.029 (*)	31.1 (±2.6)	29.5 (±3.6)	0.016	0.031 (*)
Temperature P-4	27.9 (±3.7)	29.7 (±3.6)	0.013	0.050 (*)	30.9 (±2.2)	29.5 (±3.7)	0.011	0.061 (†)
Temperature P-5	28.8 (±4.2)	30.8 (±3.5)	0.014	0.041 (*)	31.9 (±2.5)	30.6 (±3.6)	0.011	0.064 (†)
Mean temperature	28.4 (±4.1)	30.4 (±3.4)	0.016	0.032 (*)	31.6 (±2.3)	30.2 (±3.6)	0.013	0.047 (*)

P = positive, N = negative, ES = effect size, P-V = *p*-Value, ns = not significant, † = Almost significant * = Significant.

Discussion

There are several advantages to thermography. It is contactless, produces two-dimensional pictures in real time, and has no adverse radiation impacts. The key benefit is that it is a non-invasive procedure that does not disrupt or interfere with measurement [(2)].

Sakkas, H et al. found that dermatophyte fungi are the causative agents of onychomycosis, and that males are more vulnerable to this fungal illness than women. Preliminary examination of

the findings reported here coincides with existing studies, which suggest that males have proportionately more diseased nails in the age range studied [3]. According to Veiga et al., dermatophytes change the nail plate by creating dermatophytomas [4].

The current investigation excludes the possibility of an age influence on the prevalence of infection in the population investigated (18-31 years). In contrast Gupta et al. revealed in a research that onychomycosis is age-related, with an incidence of 0.42% for those aged 18-30 years and 24% for people over 80 years [5].

Conclusion:

This study finding indicate that sex influences the prevalence of dermatophytes, with males being more impacted than women by this illness. The study also found a link between the presence of infection and nail temperature, with temperature being lower in dermatophyte infection and greater in yeast infection in both men and women. The findings indicate that thermography can be viewed as a new diagnostic method for asymptomatic or incipient onychomycosis, with the benefits of being non-invasive, helping to prevent infection transmission, completely harmless, allowing for a much faster response time, and being inexpensive.

The findings suggest that thermography might be used as a new diagnostic tool for asymptomatic or incipient onychomycosis, with the advantages of being non-invasive, aiding in infection prevention, completely safe, allowing for a considerably faster reaction time, and being affordable.

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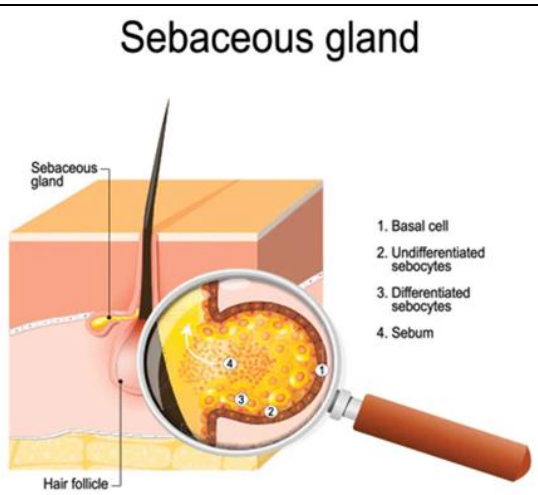
Cold Atmospheric Plasma Reduces Sebum Production in Human Facial Skin by Inhibiting Lipogenesis and Proliferation of Human Sebocytes

Introduction

Plasma, the fourth state of matter, is mostly made up of charged ions and electrons. Plasma may be produced from inert gaseous sources for a variety of medical applications by removing electrons from atoms using ultra-high frequency generators, such as radiofrequency and microwave, then radiated to target tissue with pulse durations in the milliseconds. Nitrogen gas, an inert diatomic molecule, has been commonly employed as a gaseous source to create plasma [1]. NTAPP for medicinal uses is produced using a variety of inert gaseous sources, particularly argon and nitrogen. Because nonthermal atmospheric-pressure plasma (NTAPP) is created at room temperature, it may be administered to human tissues without causing direct thermal tissue damage. It has been demonstrated that NTAPP-generated reactive oxygen and nitrogen species can enter the skin not only across the stratum corneum lipid layer, but also through hair follicles and sebaceous glands. The objective of the study is to look at the effects of NTAPP on sebum production in human skin in vivo, followed by an experimental study of human sebocytes [2].

Fig1:Sabaceous gland



Method

Fourteen healthy participants with oily face skin got three 1-week interval argon- and nitrogen-NTAPP treatments and were observed for eight weeks. The casual sebum level, rate of sebum excretion, and porphyrin index were all measured. Skin biopsy specimens were collected from two patients at baseline and week two for histological investigation. SZ95 sebocytes were activated with testosterone and linoleic acid (T/LA) alone or in combination with NTAPP. For

qualitative lipid analysis, BODIPY and Nile red staining were utilised. Markers of proliferation and differentiation were also evaluated.

Results

When compared to the baseline, casual sebum levels and sebum excretion rates in face skin reduced by 26 and 24%, respectively, after week 4. In week 2, the porphyrin index declined by 38%. NTAPP-treated human skin revealed no evident thermal harm histologically, while the number of Ki67+ cells in the sebaceous glands reduced at week 2. T/LA-induced increases in neutral lipid accumulation, Ki67+ cells, and peroxisome proliferator-activated receptor transcription were reduced by argon and nitrogen-NTAPP in human sebocytes at energy levels that did not promote apoptosis. After 2 weeks, casual sebum levels on the forehead and cheeks were reduced by 16% and 19.1%, respectively, and by 28% and 23.2%, respectively, after 4 weeks (fig 2). However, no statistically significant difference was seen between casual sebum levels at 8 weeks and baseline. Furthermore, at 4 weeks, the sebum excretion rate of the forehead dropped by 26.6%. Sebum excretion rates in both cheeks decreased by 15.5% and 22.9% at weeks 2 and 4, respectively, as compared to baseline values.

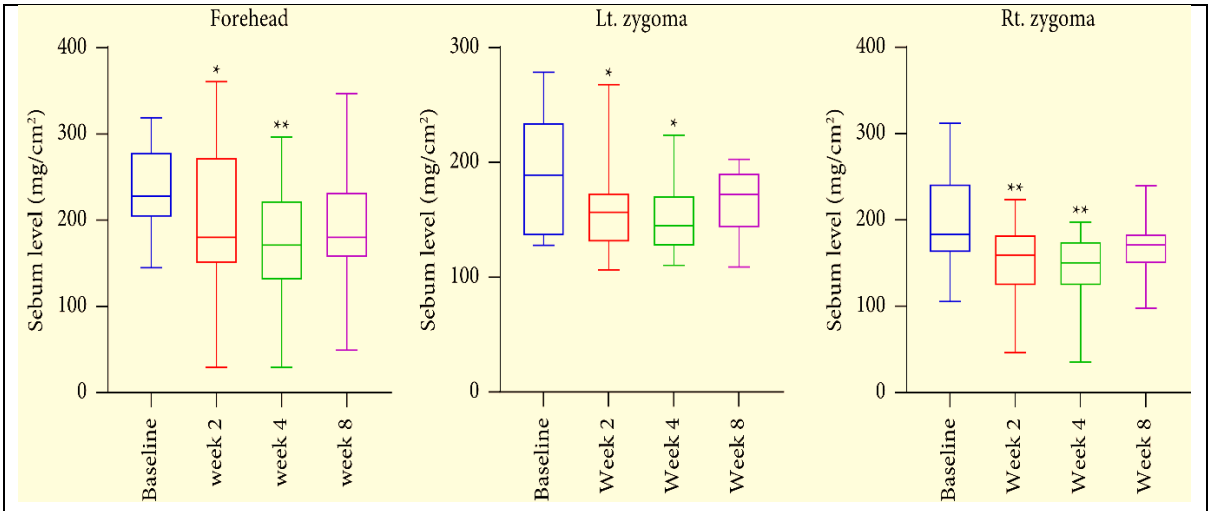


Fig2: Effects of argon- and nitrogen-NTAPP pulses on facial sebum excretion in subjects with oily skin. The casual sebum level and the sebum excretion rate

Discussion:

In this study, we found that argon- and nitrogen-containing NTAPP therapy significantly decreased sebum excretion in oily face skin, with the greatest effect at week 4. NTAPP therapy also reduced Ki67-positive proliferative cells within oily skin's sebaceous glands.

H. Kim et al. previously demonstrated that five pulses of argon plasma at energy settings ranging from 0.35 J to 0.85 J or nitrogen plasma at energy settings ranging from 1.0 J to 2.0 J caused grey thermal tissue responses in the sebaceous glands without significant carbonization [(1)]. In contrast this study's, histological evaluation of argon- and nitrogen-NTAPP-treated human skin revealed no visible alterations related with the thermal tissue response in sebaceous glands.

Notably, argon- and nitrogen-NTAPP therapy lowered porphyrin levels in oily human skin substantially. Given that C. acnes is the primary producer of porphyrins, this study finding suggests that NTAPP having a suppressive impact on C. acnes. Paula Bourke in his research discovered the antimicrobial properties of cold atmospheric plasma in the biological environment and on artificial surface [(3)].

Conclusion:

In conclusion, this study finding show that argon- and nitrogen-NTAPP might be a potential alternative energy-based treatment for sebaceous glands that does not cause thermal tissue damage. Because of their impact on sebum production and porphyrin levels in oily skin, argon- and nitrogen-NTAPP pulses have the potential to be used to treat acne vulgaris.

The use of argon- and nitrogen-NTAPP as an alternative energy-based therapy for sebaceous glands that does not induce thermal tissue damage.

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A case report on the treatment of periorbital syringomas with intradermal botulinum toxin A monotherapy vs carbon dioxide laser.

Introduction

Syringoma is a benign adnexal skin tumour arising from the eccrine sweat duct, which is more prevalent in women (2:1) and is generally detected as many, small, hard, flesh-colored papules on the eyelid and upper face, but there have been instances involving the vulvar area [(1)]. They might create psychological stress if they are placed in sensitive locations such as the periorbital region. Periorbital syringomas remain a therapeutic challenge, with no consistently successful therapy. One of the latest therapeutic techniques for periorbital syringomas is intradermal injection of botulinum toxin A. A 53-year-old female patient with periorbital syringomas was effectively treated with intradermal botulinum toxin A Monotherapy as a painless, cost-effective treatment that superior to carbon dioxide laser.

Case Presentation:

A 53-year-old female presented to the dermatology and venereology clinic with skin-colored papules measuring 1 to 3 mm in diameter around her eyes. She'd had them for 9 years and they'd gradually become bigger. The lesions were neither painful or itchy for the patient. The lesions returned 5 years after the patient had a CO2 laser therapy. Multiple skin-colored papules compatible with syringoma findings were identified in the periorbital area during a dermatological examination.

The patient agreed to a split-face surgery that included the use of a CO2 laser and intradermal BTX-A on the left and right periorbital regions, respectively. The left periorbital region was treated with an ablative CO2 laser, and topical anaesthesia was administered 30 minutes before the surgery. A vial containing 100 units of BTX-A was diluted with 2.5 ml of preservative-free normal saline solution, and 24 International Units (IU) were given intradermally into the lesions on the right periorbital using a 30G× 4 mm needle and a 1 cc syringe.

The patient found intradermal botulinum toxin A injection to be more pleasant and less uncomfortable than CO2 laser treatment. Within distinct time intervals, both therapy approaches resulted in significant improvement. The lesion on the left periorbital region, which was treated with a CO2 laser, vanished instantly, with a wound healing duration of around 2 weeks. Significant improvement developed gradually in the right periorbital region, which was treated with intradermal BTX-A, with no return at the seven-month follow-up (Fig. 1).

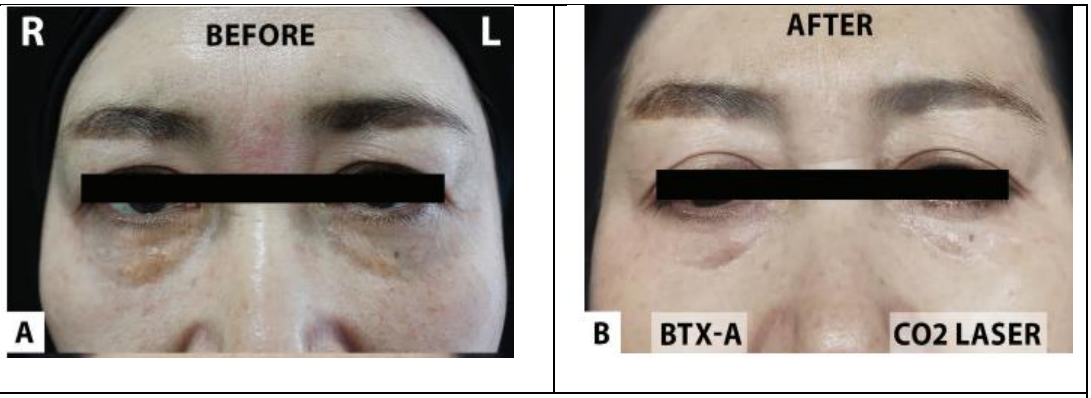

Figure 1 | (A) Before treatment, (B) 7-month follow-up after intradermal botulinum toxin A on the right periorbital area showed significant improvement, whereas the left periorbital area treated with CO2 laser showed recurrence of syringomas.

Discussion

In a study of 92 patients with periorbital syringomas, Hyun-Min Seo et al. discovered that CO2 laser combined with BTXA had a greater effect than CO2 laser alone [3].

Zaldivar-Fujigaki et al conclude in a similar case report that intradermal botulinum toxin A is a painless, cost-effective, and safe approach for the treatment of numerous syringomas therapy in the periocular and lip region with excellent results [2].

Conclusion

In the treatment of periorbital syringomas, intradermal BTX-A injection is a painless and cost-effective therapy with superior long-term outcomes than CO2 laser.

Intradermal BTX-A injection is a painless and cost-effective therapy that outperforms CO2 laser in the treatment of periorbital syringomas.

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