

Comparative Study to Evaluate the Efficacy of Radiofrequency Ablation Versus Electrocautery in the treatment of Xanthelasma Palpebrum.

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Received: August 2017

Accepted: August 2017

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ABSTRACT

Background: Xanthelasma palpebrum (XP) is a disorder of lipid metabolism that usually presents as bilateral and symmetrical, soft velvety papules and plaques around the eyelids. Radiofrequency ablation and electrocauterisation have been listed in the treatment of XP, but very few studies are available comparing these modalities. Objective: To compare the efficacy of radiofrequency ablation and electrocautery in treatment of xanthelasma palpebrum. **Methods:** Forty Indian patients presenting to Dermatology OPD of Era's Lucknow Medical College and Hospital, Lucknow with Xanthelasma Palpebrum were included in the study. After consent for participation in the study, patients were randomly divided into 2 groups of 20 each. One group was treated with electrocautery and other group with radiofrequency ablation and results were compared. **Results:** Radiofrequency ablation is safe, effective and economically viable therapeutic alternative to electrocautery. **Conclusion:** In Indian scenario, where many practitioners are providing services with limited resources, radiofrequency ablation is a practical modality for treatment of Xanthelasma along with electrocautery.

Keywords: Radiofrequency (RF), Xanthelasma Palpebrum (XP), Electrocautery (EC), Trichloroacetic acid (TCA).

INTRODUCTION

Xanthelasma palpebrarum (xanthelasma) is a disease involving the eyelids. It is usually bilateral and is characterized by the development of yellowish plaques related to presence of cholesterol. They most commonly affect the upper eyelids and the area around the medial canthus.^[1] Histological examination reveals esterified cholesterol deposits situated in the cytoplasm of histiocytes in the middle and superficial layers of the dermis. The epidermis is otherwise normal.^[2] Many treatment modalities have been proposed owing to the extension and unsightly nature of these lesions, including surgical resection, trichloroacetic acid (TCA) peeling, continuous or pulse mode CO2 lasers, erbium:YAG laser or pulsed dye laser.^[3-6]

However, these treatment modalities have certain limitations. With this background, this study aims to compare electrocautery with radiofrequency ablation in terms of safety, feasibility and results. Radiofrequency (RF) ablation and electrocautery have been listed among the procedures for treatment of Xanthelasma Palpebrum, but comparative studies between these two modalities are lacking.^[7]

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MATERIALS AND METHODS

Forty Indian patients of Xanthelasma presenting to Dermatology OPD of Era's Lucknow Medical College and Hospital, Lucknow with Xanthelasma Palpebrum were included in the study. Clinical diagnosis was made by examining dermatologist. After consent for participation in the study, patients were randomly divided into 2 groups of 20 each. Radiofrequency ablation was done in 20 patients (15 females and 5 males) bilaterally and electrocautery ablation done in rest of 20 (13 females and 7 males). Study was conducted between June 2016 – January 2017. Patients were followed for 4 weeks.

Inclusion Criteria

1. Both male and female patients with Xanthelasma Palpebrum
2. Consent to participate in study.

Exclusion criteria

1. Active herpetic lesions in periorbital area.
2. Scars.
3. Patients on anticoagulation medications.
4. History of pacemaker.
5. Any history of allergy
6. Keloidal tendencies
7. Unrealistic expectations

In radiofrequency group EMLA (lignocaine 2.5% and prilocaine 2.5% mixture) was applied for 45 minutes, after wards localized area was cleaned with

spirit and normal saline. The lesions were ablated till the underlying tissue was seen. Procedures were repeated at 2 weekly intervals if required based on the individual cases. The duration of treatment was for 4 weeks.

In case of electrocautery group EMLA (lignocaine 2.5% and prilocaine 2.5% mixture) was applied for 45 minutes. Afterwards localized area was cleaned with spirit and betadine. The lesions were cauterized till they turned brown. Procedure was repeated at 2 weekly intervals in subjects with less than 75% clearing. The patients treated with RF/Electrocautery were asked to apply topical antibiotic (2% fusidic acid) for 5 to 7 days till healing of lesions following the procedure. The clinical improvement was assessed on bi-weekly basis with serial photographs for 4 weeks. The results were scored on a 0–4 point scale.^[8]

- 0 - No improvement
- 1 - Moderate result (<25% clearing)
- 2 - Satisfactory result (25%–50% clearing)
- 3 - Good result (50%–75% clearing)
- 4 - Excellent result (>75% clearing).

RESULTS

Forty Indian patients of XP, 20 in each group were included in the study. Majority of patients were in age group of 35 – 65 years. There were 32 females and 8 males (male: female 1:4), indicating female preponderance. Duration of disease varied from 6 months to 5 years. Most common variety of xanthelasma was macular variety only while 10% had papulonodular variety. None of the patients had any associated xanthomas. 25% of the patients had associated diabetes mellitus and 7% had hypertension. Lipid profile was ordered in all the patients, only 2 patients (5%) had associated abnormal lipid profile. In both the cases serum cholesterol was raised. Final evaluation was done at the end of 4 weeks.

Appropriate response to the treatment was documented with serial photographs. Photographs were assessed for clinical improvement and associated complications. Procedure was not repeated in subjects with more than 75% clearing but all the patients were assessed at three sittings.

Method for statistical analysis:

The following methods of statistical analysis were used in this study. The results weighted sum for a sitting was calculated by giving incremental sum to the degree of results (e.g. Moderate result was assigned a weight of 1, Satisfactory – 2, Good – 3 and Excellent – 4). The weighted sum for the two treatments at the end of a specific sitting was compared using Chi-square test of significance.

In the above test, $P < 0.05$ was accepted as indicating statistical significance. Data analysis was carried out using MS Excel.

Table 1: Comparison of outcome of treatment in both groups after 1,2 and 3 sittings.

Outcome after Sitting No.	Treatment	Moderate result (<25% clearing)	Satisfactory result (25%-50% clearing)	Good result (50%-75% clearing)	Excellent result (>75% clearing)	p-value
1	RF	3	5		12	0.24
	EC		13	7	0	
2	RF			2	18	0.87
	EC		2	7	11	
3	RF				20	0.99
	EC			2	18	

Table 2: Comparison of Adverse Effects in both groups.

Adverse effects	RF Group	Electrocautery
Burning and pain during procedure	30%	80%
Hypopigmentation	None	10%
Scarring	None	None



Figure 1A: Before Electrocautery



Figure 1B: After Electrocautery

DISCUSSION

Xanthelasma palpebrum (XP) is the most common xanthoma. It is mainly located in periocular region, most commonly affecting upper eyelid and area around medial canthus.^[1] XP is most commonly seen in middle-aged and older adults with a peak incidence between 30 and 50 years. Women are more commonly affected than men. They are seen in people with normal circulating lipid levels, as well as familial hypercholesterolaemia, type III hyperlipoproteinaemia and chronic cholestasis.^[1,9]

Only 5% patients in our study were hyperlipidemic. It is more commonly seen in females. Greater concern about cosmetic appearance may be a cause of higher reporting of incidence among females.



Figure 2A: Before Radiofrequency



Figure 2B: After Radiofrequency

Depending on the size and location, several treatment modalities can be used to treat XP, ranging from simple excision to laser or chemical peeling.^[10] Various laser's have been implicated in treatment of xanthelasma like Argon, pulsed dye, CO₂, Er:YAG, and Q-switched neodymium-doped (Nd):YAG lasers.^[3,5,10-14] Common complications after laser are persistent erythema, hyper and hypopigmentation, hypertrophic scarring, skin infections, severe burns, transitory or permanent lower lid ectropion and corneal injuries or ocular perforation.^[15] Availability and cost effectiveness is also an issue for lasers in India. Chemical cauterization with TCA is also cost effective option for small lesions, but if the lesion is large, common side effects such as atrophy, scarring and hypo- or hyperpigmentation can be seen.^[16] A Koebner-like phenomenon was also reported with treatment using TCA.^[17] Electrocauterisation is cheaper than laser excision. This is used in electrofulgration mode and in low power. It allows surgeon to fulgrate the affected area, without damaging dermis, also electrocauterisation units are available at a much lower price than surgical lasers. Hence, electrocauterisation is also a good modality in treatment of xanthelasma palpebrum, as patients tolerate it well with minimal side effects.

Radiofrequency works on the principle of increasing the frequency and voltage while simultaneously decreasing the amperage of alternating current so as to generate oscillating radio waves.^[7] All patients tolerated radiofrequency ablation well, with minimal adverse effects even in lesions close to the eye. Radiofrequency ablation is good modality, as it is easy, quick, safe and cost effective too. Post treatment healing is good and results are cosmetically acceptable.

In this study EC and RF were compared as treatment modality. Comparison of results revealed both methods as effective and difference in results was statistically insignificant ($P>0.05$).

CONCLUSION

RF ablation required fewer sessions to achieve an improvement of more than 75% in clearing XP lesions compared to Electrocautery, but statistically it was not significant.

Disclosures

The authors have no relevant conflicts of interest to disclose.

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How to cite this article: Chaudhary S, Umar S. Comparative Study to Evaluate the Efficacy of Radiofrequency Ablation Versus Electrocautery in the treatment of Xanthelasma Palpebrum. *Ann. Int. Med. Den. Res.* 2017; 3(6):DT01-DT04.

Source of Support: Nil, **Conflict of Interest:** None declared