

Efficacy of Oral Tranexamic Acid in the Treatment of Melsama

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ABSTRACT

Objective: To determine the efficacy of oral tranexamic acid (TXA) in the treatment of melasma.

Study Design: Descriptive study.

Place and Duration of Study: This study was conducted at the Outpatient Department (OPD) of Medicine and Dermatology, Nishtar Hospital Multan from March 2016 to March 2017.

Materials and Methods: One hundred and ninety patients were selected. Patient's basic data and demography was noted. Patients with acquired hyper-pigmentation on the face tan to brown macules or patches located symmetrically with initial MASI score > 10 were included in this cross-sectional study. Melasma assessment severity index (MASI) score was calculated for each patient at the start of treatment. Patients were treated with oral Tranexamic acid 250 mg given twice daily for a period of six weeks. After 6 weeks of treatment with oral TXA, MASI score was again calculated for each patient. Difference between two MASI scores (i.e MASI score reduction) and percentage of reduction in MASI score of each patient was calculated. Data analysis was computer based with the use of SPSS version 16.

Results: A total of 190 women were included in this study, all patients had MASI score more than 10 before start of treatment. Mean age of our study cases was 34.43 ± 9.23 years with minimum age was 26 years and maximum age was 60 years. Menopausal status was positive in only 18 (9.5%) of our study cases. Mean pretreatment MASI score 39.60 ± 8.04 , with minimum MASI score was 25 and maximum was 47. Mean post treatment MASI score was 5.35 ± 2.56 with minimum MASI score was 2 while maximum was 9. Our study results have indicated that there was significant reduction of MASI score in terms of pretreatment MASI score and post treatment MASI score ($p=0.000$). Excellent response was seen in 68(35.8%) of our study cases while 122 (64.2%) had good response with oral tranexamic acid.

Conclusion: Oral use of Tranexamic acid is efficacious, safe and effective treatment for the melasma patients without any serious side effect. Oral administration of Tranexamic acid provides rapid and sustained clinical improvement in the treatment of melasma. The results of our study support use of Oral Tranexamic acid among targeted population which had significant impact on the improvement of quality of life of these patients and relieved them from psychological stress of this disease. Further studies on this subject are needed.

Key Words: Melasma, Tranexamic acid, efficacy.

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INTRODUCTION

Melasma is referred as acquired hypermelanosis of body parts that are exposed to the sun¹⁻³. Characteristic presentation of melasma involves symmetrically arranged hyperpigmented macules that may be punctate and/or confluent⁴. Forehead, chin, cheeks and upper lip are commonly affected locations and it may occur occasionally on other sun-exposed body areas⁵.

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However pathophysiology of melasma still remains unclear. In most of the cases, hormonal activity in females appears to have direct relationship with melasma as it is commonly observed during pregnancy and use of oral contraceptive drugs⁶. Other underlying factors involved in etio-pathogenesis of the disease include; medication with photosensitizing agents, thyroid dysfunction, Ovarian dysfunction and different kinds of cosmetics⁷. Sunlight exposure has been reported to be important factor in developing melasma and all wavelengths of the sunlight can induce melasma. All potential treatments seem to fail without strict avoidance of exposure to sunlight, making it difficult to treat. Pigmentation as well as resolution of melasma is gradual. Recurrence and resistant cases are often reported if avoidance of sunlight is not heeded. Till date none of its existing treatment modalities have yielded desired outcomes in terms of quick and sustained recovery. Topical hydroquinone is recognized

as gold standard for topical treatment of melasma⁸. Existing plethora of remedies include prevention of UV radiation exposure, chemical peeling, topical bleaching agents and light based treatment therapies. Laser based treatment modalities include such as; Q – switched Alexandrite laser, fraxel laser, Er-YAG laser, pulsed carbon dioxide laser and intense pulsed light (IPL) laser treatment⁹. Addition of Tranexamic Acid (TXA) is a novel concept in treating patients of melasma which was earlier employed as an-antifibrinolytic agent. Tranexamic Acid is currently used for inhibition of plasminogen-keratinocyte interactions which decreases tyrosinase enzyme activity. This leads to decrease in melanin synthesis from the melanocytes. Various drug trials have reported the efficacy of TXA showing total improvement rates to be 95.9%¹⁰ in the treatment of melasma.

Proper management of melasma helps improve productivity of the patients as it hits main working force of the society, hence plays important role in the national productivity and health economy. So we conducted this study to document efficacy of tranexamic acid in treatment of female patients having melasma.

MATERIALS AND METHODS

One hundred and ninety patients from Nishtar Hospital Multan outpatient department (OPD) of Medicine and Dermatology were selected. Patient's basic data and demography were noted. Patients with acquired hyper-pigmentation on the face, tan to brown macules or patches located symmetrically with initial MASI score > 10 were included in this cross-sectional study. Patients having thrombosis, blood coagulation disorder, psychological disorders or showing expectation for the treatment, already taking treatments for melasma within 6 months and lactating mothers/pregnant ladies were excluded from our study. All patients were subjected to the following diagnostic work-up: physical examination and all baseline investigations i.e blood complete picture, liver function tests, renal function tests and clotting profile. MASI score was calculated for each patient at the start of treatment. Patients were treated with oral Tranexamic acid 250 mg given twice daily for a period of six weeks. After 6 weeks of treatment with oral TXA, MASI score was again calculated for each patient. Difference between two MASI scores (i.e MASI score reduction) and percentage of reduction in MASI score of each patient was calculated. Efficacy was measured in terms of excellent improvement at 6 weeks of therapy with oral tranexamic acid 250 mg given twice daily, on the basis of Melasma Assessment Severity Index (MASI). The criteria for improvement was: Excellent: includes patients in whom percentage of reduction in MASI score was greater than 90%, Good: if reduction was 60-90%, fair: if reduction was

30-59% and poor if reduction was less than 30%. Data analysis was computer based with the use of SPSS version 16.

RESULTS

Mean age of our study cases was 34.43 ± 9.23 years (range; 26 – 60 years) and 152 (80%) were in the range of 20-40 years of age. Menopausal status was positive in only 18 (9.5%) of our study cases. Mean pretreatment MASI score 39.60 ± 8.04 , minimum MASI score was 25 and maximum was 47. Our study results have indicated that majority of our study cases i.e. 138 (72.6%) had pre-treatment MASI score in the range of 31-48. Mean post treatment MASI score was 5.35 ± 2.56 , minimum MASI score was 2 while maximum was 9. All patients had MASI score more than 10 before start of treatment. Our study results have indicated that there was significant reduction of MASI score in terms of pretreatment MASI score and post treatment MASI score ($p=0.000$).

Table No. 1: Stratification of efficacy with regards to age. (n=190)

Age groups (In Years)	Efficacy		P-value
	Yes (n=68)	No (n=122)	
20 – 40 (n=152)	56	96	0.792
41 – 60 (n=38)	12	26	
Total	190		

Table No.2: Stratification of efficacy with regards to menopause status. (n=190)

Menopause status	Efficacy		P-value
	Yes (n=68)	No (n=122)	
Yes (n=18)	12	06	0.065
No (n=172)	56	116	
Total	190		

Table No. 3: Stratification of efficacy with regards to Pretreatment MASI score. (n=190)

MASI Score	Efficacy		P-value
	Yes (n=68)	No (n=122)	
11 – 30 (n=52)	12	40	0.151
31 – 48 (n=138)	56	82	
Total	190		

Table No. 4: Distribution of pretreatment MASI score with efficacy. (n=190)

Efficacy	Pretreatment MASI score		P-value
	Mean	Standard deviation	
Yes (n=68)	38.39	7.92	0.05
No (n=122)	41.76	7.92	

Table No. 5: Distribution of post treatment MASI score with efficacy. (n=190)

Efficacy	Post treatment MASI score		P-value
	Mean	Standard deviation	
Yes (n=68)	3.12	1.00	0.000
No (n=122)	6.59	2.31	

Excellent response was seen in 68 (35.8%) of our study cases while 122 (64.2%) had post treatment MASI score less than 90% reduction with oral tranexamic acid. Of these 122 study cases, 103 (55.8 %) had good response with oral tranexamic acid while 8.4 % had fair post treatment response.

DISCUSSION

Melasma is associated with high impact on aesthetic appearance, causes psychosocial and emotional distress. Its implications have significant impact on the quality of life & personality of patients in reducing their productivity and physical activity^{11,12}. Additionally there are extra medical expenses of treatment which usually do not yield expectations of patients. As melasma affects mainly face which is easily visible distresses patients in their daily life routine, motivating patients to consult healthcare professionals¹³⁻¹⁴. Proper management of melasma helps improve productivity of the patients as it hits main working force of the society, hence plays important role in the national productivity and health economy.

So this study was conducted to document the efficacy of oral Tranexamic acid in the treatment of melasma in females. A total of 190 women meeting inclusion and exclusion criteria of this study were included in this study. All patients had MASI score more than 10 before start of treatment. Mean age of our study cases was 34.43 ± 9.23 years (range; 26 – 60 years) and 152 (80%) were in the range of 20-40 years of age. Ali et al¹⁵ from Lahore reported similar mean of patients in which majority of them were young with melasma i.e. 29.90 ± 7.18 years. Their findings are close to our study findings. Similar results have been reported by Halder et al¹⁶.

Studies have shown considerable reduction in prevalence of melasma after 50 years of age¹⁷. Menopausal status was positive in only 18 (9.5%) of our study cases. Hexsel et al¹⁸ from Brazil reported 14.2% women were menopausal having melasma. These findings are close to that of our study results. Mean pretreatment MASI score 39.60 ± 8.04 , with minimum MASI score was 25 and maximum was 47. Our study results have indicated that majority of our study cases i.e. 138 (72.6%) had pre-treatment MASI score in the range of 31-48. Mean post treatment MASI score was 5.35 ± 2.56 with minimum MASI score was 2 while maximum was 9. Our study results have

indicated that there was significant reduction of MASI score in terms of pretreatment MASI score and post treatment MASI score ($p=0.000$). Karn et al⁹ also reported statistically significant reduction of score with oral tranexamic acid in patients with melasma. Cho et al¹⁹ also reported significant reduction of MASI score with oral tranexamic acid treatment.

In our study, Excellent response was seen in 68 (35.8%) of our study cases while 106 (55.8 %) had good response with oral tranexamic acid while 8.4 % had fair post treatment response. Different studies^{4, 5, 17-20} have documented efficacy of oral tranexamic acid in the treatment of melasma in different parts of the world. It was found to be effective, safe, cost effective with minimal side effects for the treatment of melasma. A study conducted by Wu et al¹⁰ reported 54 % good response with oral tranexamic acid which is close to our study results.

CONCLUSION

Oral use of Tranexamic acid is efficacious, safe and effective treatment for the melasma patients without any serious side effect. Oral administration of Tranexamic acid provides rapid and sustained clinical improvement in the treatment of melasma. The results of this study support use of Oral Tranexamic acid among targeted population which had significant impact on the improvement of quality of life of these patients and relieved them from psychological stress of this disease.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

- Handog EB, Galang DA, de Leon-Godinez MA, Chan GP. A randomized, double-blind, placebo-controlled trial of oral procyanidin with vitamins A, C, E for melasma among Filipino women. *Int J Dermatol* 2009;48:896-901.
- Beleznay K, Humphrey S, Au S. Erythema ab igne. *CMAJ* 2010; 182:E228.
- Arnold AW, Itin PH. Laptop computer-induced erythema ab igne in a child and review of the literature. *Pediatrics* 2010;126:e1227-30.

4. Rodrigues M, Pandya AG. Melasma: clinical diagnosis and management options. *Australas J Dermatol* 2015;56(3):151-63.
5. Rivas S, Pandya AG. Treatment of melasma with topical agents, peels and lasers: an evidence-based review. *Am J Clin Dermatol* 2013;14(5):359-76.
6. Jang YH, Lee JY, Kang HY, Lee ES, Kim YC. Oestrogen and progesterone receptor expression in melasma: an immunohistochemical analysis. *J Eur Acad Dermatol Venereol* 2010;24(11):1312-6.
7. Karn D, Khatri R, Timalisina M. Prevalence of skin diseases in Kavre district, Nepal. *Nepal J Dermatol Venereol Leperol* 2010;10:07-10.
8. Grimes PE. Management of hyperpigmentation in darker racial ethnic groups. *Semin Cutan Med Surg* 2009;28:77-85.
9. Karn D, KC S, Amatya A, Razouria EA, Timalisina M, Suwal A, et al. Q-Switched Neodymium-Doped Yttrium Aluminum Garnet Laser Therapy for Pigmented Skin Lesions: efficacy and safety. *Kathmandu Univ Med J* 2012;38:46-50.
10. Wu S, Shi H, Wu H, Yan S, Guo J, Sun Y, et al. Treatment of melasma with oral administration of tranexamic acid. *Aesthetic Plast Surg* 2012;36:964-70.
11. Napolitano LM, Cohen MJ, Cotton BA, Schreiber MA, Moore EE. Tranexamic acid in trauma: how should we use it? *J Trauma Acute Care Surg* 2013;74(6):1575-86.
12. Eimpunth S, Wanitphakdeedecha R, Triwongwanat D, Varothai S, Manuskiatti W. Therapeutic outcome of melasma treatment by dual-wavelength (511 and 578 nm) laser in patients with skin phototypes III-V. *Clin Exp Dermatol* 2014;39(3):292-7.
13. Shankar K, Godse K, Aurangabadkar S, Lahiri K, Mysore V, Ganjoo A, et al. Evidence-based treatment for melasma: expert opinion and a review. *Dermatol Ther (Heidelb)* 2014;4(2):165-86.
14. Handel AC, Miot LDB, Miot HA. Melasma: a clinical and epidemiological review. *An Bras Dermatol* 2014;89(5):771-82.
15. Ali R, Aman S, Nadeem M, Kazmi AH. Quality of life in patients of melasma. *J Pak Assoc Derma* 2013;23:143-8.
16. Halder S, Halder A, Nag SC, Sarkar RP. Melasma in the people of Sub-Himalayan region of Eastern India. *J Pak Assoc Derma* 2013;23(2):139-42.
17. Videira IF, Moura DF, Magina S. Mechanisms regulating melanogenesis. *An Bras Dermatol* 2013;88:76-83.
18. Hexsel D, Lacerda DA, Cavalcante AS, Machado Filho CA, Kalil CL, Ayres EL, et al. Epidemiology of melasma in Brazilian patients: a multicenter study. *Int J Dermatol* 2014;53(4):440-4.
19. Cho HH, Choi M, Cho S, Lee JH. Role of oral tranexamic acid in melasma patients treated with IPL and low fluence QS Nd:YAG laser. *J Dermatolog Treat* 2013;24(4):292-6.
20. Li Y, Sun Q, He Z, Fu L, He C, Yan Y. Treatment of melasma with oral administration of compound tranexamic acid: a preliminary clinical trial. *J Eur Acad Dermatol Venereol* 2014;28(3):393-4.