

Association of melasma with iron deficiency anemia and thyroid disease in females at a tertiary care hospital of Pakistan

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Abstract *Objective* To determine the association of melasma with iron deficiency anemia and thyroid diseases in females of a tertiary care hospital of Pakistan.

Patients and Methods In this retrospective study, the data of 100 adult females with melasma was retrieved from medical records by using the medix system software of the Hospital. Patients' serum TSH, T3, T4, ferritin and complete blood count was collected.

Results The mean age of presentation was 30 years. 31% of melasma patients were found to have anemia with mean Hb level 11.5g/dl. Mean serum ferritin level was 64.9 ng/ ml. Mean serum T4 and TSH were in normal range in all the patients.

Conclusion There is no association of melasma with iron deficiency anemia and thyroid diseases in females of a tertiary care hospital of Pakistan.

Key words

Melasma, anemia, thyroid function test.

Introduction

Melasma also called cholasma, is a common acquired hypermelanosis seen mainly in women. It occurs on the sun exposed skin of face and rarely on forearms.¹ Several factors have been reported to be associated with melasma in previous studies¹⁻³ including ultraviolet radiations (the most important factor), pregnancy, thyroid diseases, anemia, hepatic diseases, cosmetics and contraceptive drugs, phototoxic medications and ovarian tumors.

Cholasma has three patterns of distribution on the face⁵:

1. Centrofacial (63%): forehead, nose, chin and upper lips.
2. Malar (21%): nose and cheeks.
3. Mandibular (16%): mandibular ramus.

Melasma causes considerable cosmetic disfigurement and psychological distress and has a significant negative effect on emotional wellbeing, social life and leisure activities.⁴

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Iron, cobalt, magnesium, selenium, vitamin E and C are known to have an effect on skin diseases, but little data about serum iron level and melasma is available.⁶ Although, iron overload causes skin pigmentation in hemochromatosis, effect of iron deficiency on

skin is not clear. There are limited studies available on the role of endocrinal factors in the causation of melasma. Hence, the present study was performed to evaluate the association of melasma with iron deficiency anemia and thyroid disease.

Patients and Methods

A retrospective study was conducted at Dermatology Department of Fauji Foundation Hospital (FFH), Rawalpindi, over a period of nine months. FFH, is a tertiary care hospital. In this study previous data of 300 adult female patients was retrieved from medix system of FFH, suffering from melasma. But after collecting all data, 100 patients were finalized as the rest of the patients were not having complete information. The study protocol had approval from Hospital Ethical Committee. Blood samples were taken for serum TSH, T3, T4, ferritin and complete blood count. Tests were carried out in Hospital laboratory and were reported by pathologist.

Results

The age of patients ranged from 18 to 43 years (mean $30.44 \pm SD 5.59$ years). Thirty one patients had anemia (Hemoglobin level $Hb < 12g/dL$). Mean Hb level was $11.56 \pm SD 1.52$ g/dL.

Mean MCV, MCH, MCHC levels were in normal range; 79.71fl, 32.56 and 26.37 gHb/100ml respectively.

Serum ferritin levels were found to be in normal range 20.00-104.00 (mean 64.9).

Serum T4 and TSH were in normal range in 100% of the patients with a mean value of $15.75 \pm SD 2.54$ and $1.81 \pm SD 0.63$ respectively.

Discussion

The mean age of our study population was 30.44 years which is in agreement with findings of Perez et al.⁷ Lutfi et al. reported mean age in melasma as 34 years.³ It is clear from this data that melasma is a disease of young population in the age group of 18-40 years, who are likely to be indulging more in outdoor activities. Further, pregnancy and the usage of oral contraceptive pills are likely in this age group and this supports hormonal relationship in the pathogenesis of melasma.^{1-3,7}

The present study revealed no association of melasma with iron deficiency anemia. But other studies showed either no association or a positive association. A study conducted in Iran⁶ showed mean Hb level of 11.2 with low serum iron and ferritin showing relationship of melasma with iron deficiency anemia.⁸ Similarly Hb, serum iron and ferritin levels was found to be significantly lower in patients of melasma as compared to controls by Qazi I et al.⁹ Behrangi et al. showed low serum iron, ferritin and TIBC level in 33 non-pregnant females, but it was not statistically significant. He advised further evaluation with larger sample size.¹⁰

In our study, serum T3 level was higher than normal in just 2% of the patients but normal in almost 96%. Serum T4 and TSH level were in normal range in 100% of the patients. Similarly a study performed in India showed no correlation between severity of melasma and mean hormone levels.¹¹ Kiani et al. found that thyroid disorders were 3.4 times more prevalent in melasma patients.¹² In a study performed by Lutfi et al. thyroid disorders were four times more prevalent in melasma patients.³

The main limitation of this present retrospective study was that it had no controls. As FFH, Rawalpindi is a tertiary care hospital, it is possible that the iron deficiency and thyroid disease may have been treated at the primary or

secondary level.

Conclusion

There is no association of melasma with iron deficiency anemia and thyroid disease in females of a tertiary care hospital of Pakistan.

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