MELASMA IN BASRAH: A CLINICAL AND EPIDEMIOLOGICAL STUDY

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ABSTRACT

A total of 392 individuals were enrolled in the study divided into two main groups (196 melasma cases and 196 control group). Melasma prevalence and diagnosis were done by screening different groups of population on clinical basis with the aids of Wood's light examination *(by the same dermatologist)*. The study was carried out at the departments of microbiology and dermatology in Basrah medical college during the period from October 2003 to the end of March 2005. The study showed that melasma was more prevalent in age intervals of 21-30 years and 31-40 years presented in 45.7% and 38.2% respectively. The prevalence of melasma among dermatological clinic attendants was 0.57% while the prevalence among pregnant women, female teachers and male outdoor workers were presented in 37.9%, 17.5% and 14.2% respectively. Melasma was more frequent among brown skin patients (75.5%) compared to white (18.3%) and black (6.1%) colored skin (P<0.01). Also non-seborrhoeic skin patients was more affected (63.2%) than seborrhoeic skin (37.6%) patients (P<0.01). However, sun exposure for 4-6 hours daily was the leading aggravating factor (59.7%) of the total melasma cases although drugs and cosmetics (18.4%) and emotional factor (40.3%) had significant (P<0.01) effect on prevalence of melasma in the community.

INTRODUCTION

The exact prevalence of melasma in most coutries is unknown.[1] It occurs more frequently in young women particularly during pregnancy and at menopause.[2,3] Melasma is a common pigmentary disorder in orientals accounts for 0.25-4% of patients seen in dermatological clinics in south east Asia.[1] Two studies done in Maxico and Peru found that melasma account for 4-10% of dermatologic hospital referrals.[4] In a large study conducted in Singapore, it was shown that females were predominantly affected with female to male ratio of 21:1 at mean age of 37.6 years.[1] The epidermal type of melasma formed 2/3 of the cases.[5] Although all races are affected, melasma is more common in darker skin than in lighter skin especially in Hispanic and Asians.[6] Melasma is much rare before puberty and most commonly occur in women during reproductive years.[1] Among the reported risk factors of melasma, sun exposure, (26.8%) history of pregnancy and uses of contraceptive pills were reported in 21.1% and 13.1% of patients respectively. A positive family history was reported in 10.2% of patients.[1] Melasma affected 10% of Indian men explained by great sun exposure during their occupation.[7] Melasma in Iraq is considered as a common dermatological problem as it was seen in 26.6% of Iraqi females.[8] The objectives of the present work are to study the prevalence of melasma in the community and to identify the factors that affect the distribution and occurrence of melasma.

MATERIALS AND METHODS

Out patient based clinical study, where a total of 392 individuals were enrolled. They were, divided into two main groups (196 melasma cases and 196 control group). The prevalence of melasma was done by screening different types of population in relation to some aggravating factors. All relevant informations were collected on special questionnaire form designed for this study. Melasma cases included 196 patients (176 females and 20 males) who were attended the outpatient clinic of dermatology at AI-Sader Teaching Hospital. On the other hand, the control group was randomly collected and cross matched with that of the melasma group. They were neither having melasma nor had any family history of melasma. The cases were clinically diagnosed by the same dermatologist on clinical basis with the aids of Wood's[7] light (London) examination and accordingly melasma was classified into epidermal, dermal or mixed type on standard method[9,10] which

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was carried out by the application of Wood's light after closure of patients eyes, the colour of skin lesions is totally enhanced in epidermal type where it does not in dermal type while a partial skin colour contrast enhancement was obtained in mixed type. Melasma area and severity index (MASI)[11] was followed in scoring melasma lesions as mild, moderate or sever type. For the determination of statistical significance among different variables, ANOVA one-way and chi-square tests were performed by Minitab program version eleven.

RESULTS

Among 196 patients enrolled in the study there were 176(89.8%) females and 20(10.2%) males with female/male ratio of 9:1. Female patients were affected in proportions significantly higher than male patients (P<0.01) **(Table-1)**. Melasma cases were more prevalent in the third and fourth decades of life which was 45.7% and 38.2% respectively compared to other age groups.

Table 1. ***Occurrence of melasma according to sex and age groups.***

Age groups (years)	Melasma patients		
	Female No.(%)	Males No.(%)	Total No. (%)
10 - 20	15(8.5)	5(25)	20(10.2)
21 – 30	83(47.1)*	7(35)	90(45.7)*
31 – 40	69(39.2)*	6(30)	75(38.2)*
41-50	9(5.I)	2(I0)	11(5.6)
Total	76(89.8)	20(10.2)	196(100)

** =P < 0.01*

Table-2 presents the prevalence of melasma in different groups of population. Pregnants women attending A1-Maagal and Al-Hartha. Primary health care centers were found to have melasma in 129(37.9%). Female teachers in schools of city center consistuted 35(17.5%) of the cases. Melasma affected 54(14.2%) of male out door workers. However, although these figures look high, the records of melasma among attendants of out patients clinic of dermatology at A1-Sader teaching hospital for one year were 26(0.57%) of the total figure.

Table 2. ***Prevalence of melasma in different groups of population at risk.***

Study populations	Sample No.	Melasma No. (%)
Melasma among attendants of the dermatology clinic of Alsader TH in one year.	4526	26 (0.57)
Female teachers from Basrah Center schools (not pregnant)	200	35 (17.5)
Pregnant women attending Al-Maquel & A1-Hartha primary health care centers	340	129 (37.94)
Males outdoor workers (Oilmen & Laborers)	380	54 (14.25)
The overall prevalence	5446	244 (4.48)

Table-3 shows that the predominant skin colour affected with melasma was the brown one as it formed 75.5%(148/196) of cases compared to 18.3%(36/196) and 6.l%(12/196) of the white and black colour respectively (P<0.01).

Table 3. ***Relation of skin color with occurrence of melasma.***

Skin color	Melasma patients		Total of patients No. %	Total of controls No. %
	Females	Males		
Brown	131(74.4)	17(85)	148(75.5)	124(63.2)
White	35(19.8)	1(5)	36(18.3)	49(25)
Black	10(5.6)	2(10)	12(6.1)	27(13.7)
Total	176(89.8)	20(10.2)	196(100)	196(100)

Table-4 shows that melasma was more-frequent (63,2%) among non-seborrhoeic skin which was significantly higher than seborrhoeic skin (37.6%) cases (P <0.01).

Table 4. ***Relation of type of the skin to the occurrence of melasma.***

Type of skin	Mclasma Females	Patients Males	Total of patients	Total of controls
	No. (%)	No. (%)	No. (%)	No. (%)
Non Seborrhoeic	112(63.6)	12 (60)	124(63.2)*	149(76)
Seborrhoeic	64(36.3)	8(40)	72(36.7)	47(24)
Total	176(89.9)	20(10.2)	196(100)	196(100)

• P < 0.01

Table-5 presents some of the aggravating factors for the occurrence of melasma. Sun exposure for 4-6 hours daily is the leading factor presented in 117(59.69%) of the total melasma cases. However, uses of drugs and cosmetics (18.4%) and emotional factors (40.3%) also affected the prevalence of melasma in the community. Physiological changes in pregnancy and uses of contraceptive pills also significantly affected the prevalence of melasma among female patients as they were blamed as an aggravating factors in 41.3% and 23.96% respectively (P<0.01).

Table 5. ***The distribution of aggravating factors of melasma.***

Aggravating factors	Melasma patients		Total No. (%)
	Females No. %	Males No. %	
Sun exposure	101 (57.3)	16 (80)	117(59.69)*
Pregnancy	81 (46)	-	81(41.3)
Stress & emotional	74 (42)	5 (25)	79(40.3)
Factors		-	
Contraceptive pills	47(26.7)	-	47(23.96)
Dugs & cosmetics	30(17.04)	6(30)	36(18.4)

The prevalence of different types of melasma and their severity among the studied patients are shown in **Table-6.** Epidermal type represented 60.5% (118/196) of the cases which was higher than the dermal 15.8%(31/196) and mixed 23.9%(47/196) types. These differences were statistically significant (P<0.01). On the other hand, melasma of moderate severity was more prevalent (47.7%) compared to the mild (29.5%) and severe types (22%). These differences in the severity were statistically significant (P<0.01).

Table 6. ***Distribution of different types of melasma and their Severity.***

Severity of Melasrna	Epidermal No.(%)	Dermal No.(%)	Mixed No.(%)	Total No. (%)
Mild	34(28.8)	6(19.3)	18(38.2)	58(29.59)
Moderate	68(57.6)	10(32.2)	16(34)	94(47.79)*
severe	16(13.5)	15(48.3)	13(27.6)	44(22.4)
Total	118(60.2)*	31(15.8)	47(23.9)	196(100)

• P < 0.01

DISCUSSION

Melasma is a common acquired pigmentary disorder particularly in orientals.[12] Melasma is rare before puberty and most commonly occurs among women during their reproductive period.[2] In our study, Melasma predominantly affected patients in the third and fourth decades or within an age range between 20-40 years with a domination of females on males(ratio 9:1).These figures are

similar to that of previous studies.[8,13] Although melasma is considered as mild dermatological problem but it has a social impact on affected female patients in this period of life, having physiologic hormonal changes and seeking cosmetic benefit by the use of variety of chemical and drugs that affect melanogenesis.[3,17] The low prevalence of melasma cases among attendants of dermatological clinic in Basrah is consistent with other studies[3], which is attributed to the fact that melasma is a cosmetic problem where majority of patients prefer to consult their dermatologist in private clinics. However, the general population prevalence is higher especially among pregnant women which is consistent with that of previous studies.[8,13] The high prevalence of melasma among female teachers can be explained as the majority of patients in this group were in the age of active reproductive period affected by the effect of estrogen and progesterone on melanocytes stimulating hormones levels which increases melanin production.[14] Moreover, melasma is enhanced by the effect of ultraviolet light or solar radiation on skin through the use of cosmetics. Unfortunately no previous study for comparison. Melasma was more prevalent among brown coloured skin in comparison with other types of skin colour which is similar to the finding of previous studies.[15,16] This can be explained by the fact that brown and black skin are said to produce more melanin in response to solar radiation[17] which is higher and more prolonged during the year in our area than cold countries in addition, brown to black skin are the commonest skin types in our locality. However, the high prevalence of melasma among non-seborrhoeic is probably attributed to the presence of sebum which may enhance the transport of antioxidants to the skin surface[18] leading to a decrease in melanin production.[19] Multiple aggravating factors have been implicated in the aetiology of melasma including ultraviolet (sun light), hormones (oral contraceptive[19], pregnancy)[1], drugs and cosmetics[20], in addition to stress and emotional factors[21], since the ultraviolet exposure is considered as a major factor for melasma where sun light can cause peroxidation of lipid in cellular membranes leading to generation of free radicals which could stimulate melanogenesis.[20] Furthermore, keratinocytes after exposure to ultraviolet release some mediators like interlukin alpha (IL-1alpha)[22] and endothelin-1 (ET-1) that stimulate melanogenesis.[23] Pregnancy was also reported as aggravating factor which can be attributed to hormonal effect of estrogen, progestron and melanocytes stimulating hormone (MSH) levels which are increased during pregnancy.[1] On the other hand, stress and emotional factors may play a role in aggravation of melasma. This finding is in consistence with that of another study[13] which reported that stress may induce the release of melanocyte stimulating hormone (MSH) by hypothalamus.[21,24] However, some drugs has been incriminated to produce melasma, like antiepileptic and variety of cosmetics like perfumes, soaps, creams, powders, shampoo...etc, that contain psoralen derivatives or hexachlophane substances which is photodynamic that may cause hyperpigmentation of the face.[8,20]

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