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The Effect of Fetal Gender and Gravidity on Melasma of Pregnancy

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ABSTRACT

Background Melasma is a common cause of consultations by dark-skinned patients at dermatology departments. However, few studies on this condition have been done in Iraq.

Objective To investigate the relationship between gravidity and fetal gender on the one hand and the chloasma of pregnancy on the other hand in the population.

Methods We collected date using structured self-administered questionnaire. A total of 50 female melasmic patients who were referred to the hospital for a consultation and fulfill the criteria were included prospectively from April 2021 to August 2021. A cross –sectional study was conducted

Results Our study showed 50% presented were a phototype III, 44% were a phototype IV and 6% were a phototype II. The mean of age was 34.32 + 5.12 years. About 70% of sample developed melasma at age above thirty. The association between melasma and gravidity showed that a multigravida women constitute 96% and primigravida women constitute 4% of the sample. Furthermore, our study showed there was a relationship between gender of the baby and melasma

Conclusion This study identified that melasma of pregnancy is more common in women who had a male fetus and a multigravida.

Keywords: Fetal gender, Gravidity, Melisma, Pregnancy.

Introduction

Melasma is a melanogenesis dysfunction that results in localized, chronic acquired hyperpigmentation of the skin, it occurs symmetrically on sun exposed areas of the body and affects both genders male and female(1).the Greek root of word melasma originates from “melas”, which means black , and refers to its brownish skin appearance, while the term “chloasma” (originated from the Latin word chlóos and the Greek word cloazein: greenish) is still used in the medicine(2). The melasma etiology has not been clearly identified, factors associated with melasma include genetic influences, exposure to ultraviolet light, hormones associated with pregnancy, oral contraceptives, hormone replacement therapy, thyroid autoimmunity, cosmetic ingredients, and drugs. The UV light exposure and genetic factors are being the strongest predictors [3:4)]. Studies shown Hormonal influence play a significant role in the pathogenesis of melasma as seen by the increased prevalence with pregnancy, oral contraceptive use and other hormonal therapies [5] . An immunohistochemical study of the epidermis and dermis of affected and unaffected neighboring skin found significantly increased expression of the progesterone receptors in the epidermis of affected skin [6]. There was also increased estrogen receptor protein expression in the dermis and around the blood vessels, which is currently of unknown significance [7]. Before the advent of ultrasound, people came up with all kind of ways to tell whether a pregnant woman carried a boy or girl, one of these methods even involved looking at the skin pigmentation

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changes often associated with pregnancy (Sarkar & Bansal., 2017) [8]. previous studies demonstrated that fetus gender is associated with different level of maternal hormones. Women carrying female fetuses have higher HCG levels than women carrying male fetuses [9]. Also studies showed that women carrying male fetuses had higher rates of gestational diabetes mellitus, fetal macrosomia, failure to progress during the first and second stages of labor, cord prolapse, nuchal cord, and true umbilical cord knots. Cesarean sections were also more frequently seen among male neonates compared with female neonates [10] . One study showed that women carrying male fetuses had a higher serum level of immunoglobulin E than that carrying female fetuses [11]

Aim of the Study

The present study aimed to

- Assess relationship between fetal gender and cholasma of pregnancy.
- Assess relationship between gravidity and cholasma of pregnancy.

Materials and Methods

A cross-sectional study was carried out. The study was conducted at dermatology outpatient clinic, in Al-Hussein Teaching Hospital during the period from April 2021 to August 2021 . Women who were younger than 18 years and older than 45 years, those who had a history of twin pregnancy, those who had a history of abortion, those who reported that their melasma was initiated by a psychological trauma, sun exposure and by topical OTC or herbal topical compounds, those who reported taking a hormone replacement therapy or any kind of hormonal contraception and those who have a pre-existing thyroid disease were excluded from the study. Data were collected using standardized questionnaires that was made by two consultant dermatologists at the department . The study was agreed on and approved by the ethical committee of College of Medicine, University of Thi qar and an informed written consent was obtained from the included patients. The patients who were referred to the outpatients clinic in Al-Hussain teaching hospital and meet the above mentioned criteria were included in the study. The data were collected on obstetric history, phenotypic characteristics, skin alterations developed during pregnancy, and exclusion criteria. The Fitzpatrick scale was used to determine the skin type of the participants.

Statistical Design

Data entry and analysis were done using SPSS version 18 Program statistical software package for social sciences. Data were presented using descriptive statistics in the form of frequencies and percentages. Also, Mean was calculated. Correlation between variables (Pearson correlation) and (t-test) were used. Statistical significance was considered at P-value ≤0.05.

Results

The study comprised of 50 female patients having a melasma and meeting our strict criteria from April 2021 to August 2021. The age of females in our study ranges from 26 to 45 years, the mean age of patients was 34.32 ± 5.12. They mostly presented with melasma after the third decade of life. the demographic features of which are illustrated in Table 1.

A positive family history of melasma was observed in 27 (54%) patients. The gravidity distribution was primigravida constitute 2 (4%) whereas multigravida represent 48 (96%). p≤ 0.0001[table 2. Fig-1]. Women having pigmentary change after carrying a male fetus was observed in 32 (64%) whereas 18 (36%) of women carrying a female fetus showed pigmentary changes. Regarding the skin phototype,

Table 1: Demographic distribution of study population

Variables	*Sample (n =50)*	*Percent %*
Age (years)		
Mean ± SD	34.32 ± 6.8	
Age group		
≤30 years	15	30%
above 30 years	35	70%
Gender of baby		
Women carrying a male fetus	32	64%
Women carrying a female fetus	18	36%
Order of gravidity		
Primigravida	2	4%
Multigravida	48	96%
Skin phototype		
phototype III	25	50%
phototype IV	22	44%
phototype II	3	6%

Table 2: Statistical analysis of association between pigmentary changes and gravidity (n=50)

Type of gravidity	*Present*	*Test of Significance*
Primigravida	2 (4%)	p≤ 0.0001
Multigravida	48 (96%)	

Statistical analysis done by Fisher's exact test.

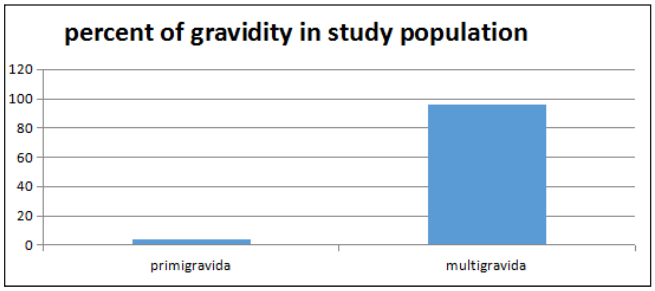

Figure 1: Gravidity distribution of study population

25 (50%) of women being studied presented with phototype III, 22 (44%) with a phototype IV and 3 (6%) with a phototype II

Discussion

During pregnancy some women develop dark patches on their cheeks and forehead that are called 'chloasma' or mask of pregnancy. Chloasma commonly first appears during pregnancy.

Our study demonstrated that the melasma was higher in women with intermediate skin phototypes III and IV which is similar to Brazilian study in which the phototypes III and IV were the dominant type.[18]

Hyun et al. (2018) reported that more than half (59.1%) of studied women have age more than 35 year old and employed

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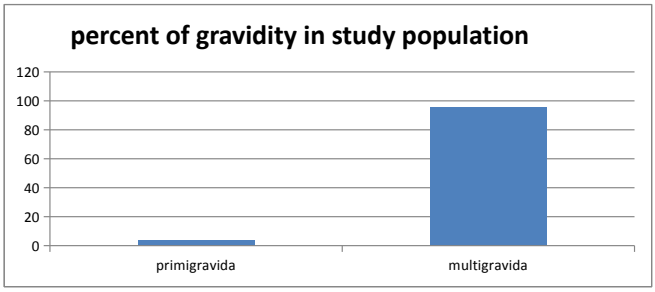

Figure 1: Gravidity distribution of study population

which is consistent with our results that showed a mean age of sample of 34.32 year old [17] .

In present study, we observe the relationship between fetal sex of chloasma-triggering pregnancy and facial changes of the pregnant woman (chloasma) during this pregnancy . Furthermore, it is obvious that the chloasma was higher in women bearing a male sex than women carrying a female fetus. Recent studies have confirmed that interleukin (IL)-1, IL-4, IL-6 and other inflammatory mediators can regulate the proliferation and differentiation of human epidermal melanocytes directly or indirectly and participate in the regulation of melanogenesis in melanocytes and the formation of melasma [13–18.]

Elizabeth et al. 2014 found that women carrying a male fetus exhibit a more proinflammatory/proangiogenic immune milieu than women carrying a female fetus. While female fetuses are associated with an increased expression of regulatory cytokines, the male fetal sex was associated with higher levels of proinflammatory cytokines (G-CSF, IL-12p70, IL-21, and IL-33) and angiogenic factors (PlGF and VEGF-A) compared with female fetal sex at multiple time points [16] .

in other studies, it is observed that throughout the three trimesters of pregnancy, there was a tendency of women carrying a male fetus to have a higher mean total IgE level [11] .IgE represent an important pro-inflammatory mediator.

In present study when observing the relationship between melasma and gravidity history, the melasma was seen more in multigravida, which is similar to previous studies that showed the recurrences of melasma are common in subsequent pregnancies and the chances of developing melasma for the first time during pregnancy increase with a history of multigravidity. [19-24] Our finding that the probabilities of melasma appearing for the first time during a pregnancy increases as the numbers of gravidity increases is expected, if pregnancy is a trigger factor.

Conclusion

Our study concluded that the pregnancy triggered melasma is more often seen in women who had a male fetal sex compared to female fetal sex and more often seen in multigravida compared to primigravida. Besides, the study showed those women with intermediate skin prototype III-IV are more prone to develop melasma during the pregnancy. Moreover, most of melasma of pregnancy in the current study developed at age older than 30 year old.

Limitations

The limitations of present study included the small sample of studied women and the lack of diversity in ethnicity and geographic distribution. Accordingly, a large-scale study on a sample composed of diverse ethnicity and cities from the south to the north of Iraq is recommended.

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