VALIDITY OF WOOD'S LIGHT IN MELASMA

Thesis

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By

Asmaa Mahmoud Hamed Bawa

(M.B, B. CH.)

Faculty of Medicine – Cairo University

Under Supervision of

Prof. Dr. May Hussein El Samahy

Professor of Dermatology, Venereology and Andrology

Faculty of Medicine – Ain Shams University

Dr. Naglaa Samier Ahmed

Assistant Professor of Pathology

Faculty of Medicine, Ain Shams University

Dr. Azza Esmat Mostafa

Lecturer of Dermatology, Venereology and Andrology

Faculty of Medicine – Ain Shams University

Faculty of Medicine

Ain Shams University

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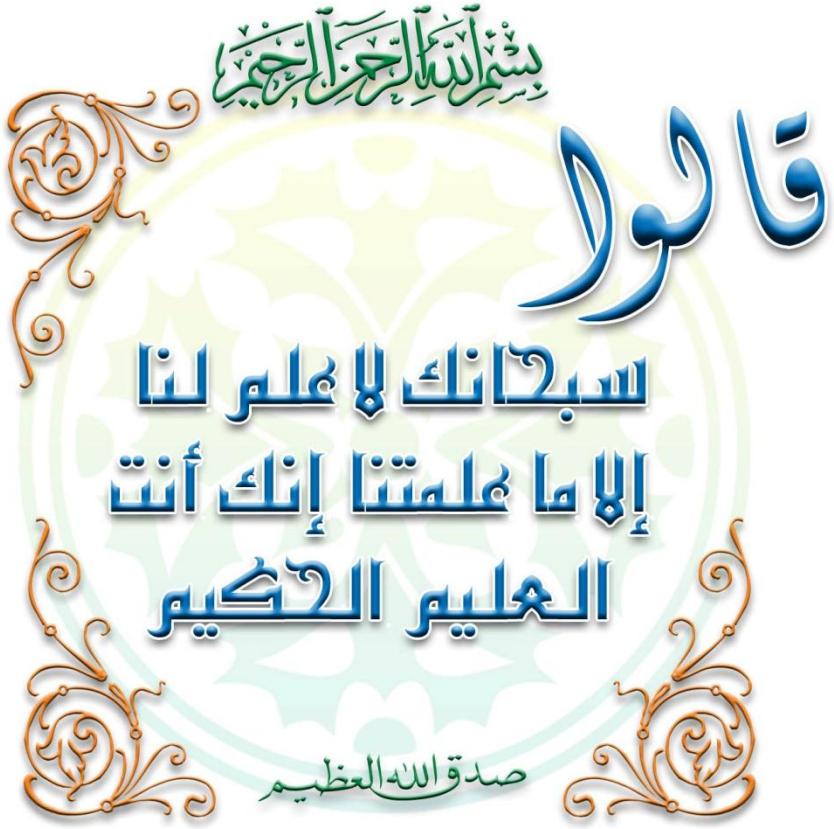

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List of Abbreviations

Abb.	Mean
COX-2	Cyclooxegenase -2
DOPA	Dihydroxy phenyl alanine
FP	Fractional photothermolysis
GA	Glycolic acid
H&E	Hematoxin and Eosin
LASER	Light amplification by stimulated emission of radiation
MASI	Melasma area and severity index
MSH	Melanocyte stimulating hormone
MSP	Minimized selected photothermolysis
PDL	Pulsed dye laser
PLDL	Pigmented lesion dye laser
PPARα	Peroxisome proliferator activated receptor alpha
QSAL	Quality-swiched alexandrite laser
SA	Salicylic acid
SCF	Stem cell factor
SPSS	Statistical package for social science
TCA	Trichloroacetic acid
TCC	Triple combination cream
UV	Ultra violet
VEGF	Vascular endothelial growth factor
YAG	Yttrium aluminum garnet

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Introduction

Melasma (chloasma) is a common acquired symmetric hypermelanosis characterized by irregular light-brown to gray-brown macules and patches with well-defined margins. It involves sun-exposed areas most commonly the face and arms **(Sanchez et al., 1981).** Although the majority of melasma cases occur in women of reproductive age from all racial groups, 10% of cases have been reported in males **(Johnston et al., 1998).**

The exact aetiopathogenesis of melasma is unknown, although multiple factors have been implicated. Solar and ultraviolet (UV) exposures are the best known etiologic factors. These include genetic predisposition; medications, such as phototoxic drugs and anticonvulsants **(Ortonne et al., 2009);** and, most notably, hormonal influences **(Hassan et al., 1998).**

Clinically, melasma usually occurs in one of three patterns. The most common is the centrofacial pattern with involvement of the lateral forehead, cheeks, nose, upper lip and chin. The less common patterns include the malar and the mandibular types. Lesions may occasionally occur in other sun-exposed areas including the forearms and the mid- upper chest **(Lieberman and Moy, 2008).**

Based on Wood's light examination, with correlation with histopathology, four major clinicopathologic types and patterns could be detected. These include; a) epidermal melasma: with enhancement of pigmentation under Wood's light, histologically it is characterized by a melanin increase in the basal, suprabasal, and stratum corneum layers; b) dermal melasma: ashen or bluish-gray with no enhancement of pigmentation under Wood's light, histologically there is a preponderance of melanophages in the superficial and deep dermis c) mixed melasma: dark-brown with enhancement of pigmentation under Wood's light in some areas and not in others and lastly d) indeterminate type which is unapparent under Wood's light **(Grimes, 1995; Gilchrest et al., 1997).**

Even though, **Kang et al. (2002)** reported that there is no true dermal type of melasma. In addition, it has been demonstrated that the melanocytes within affected skin are larger, intensely stained with prominent dendrites and contain more melanosomes than melanocytes of unaffected skin, suggesting that these cells may be hyper-functional in melasma **(Grimes et al., 2005).**

Quantification of the skin melanin content would provide valuable information to assess a clinical grade, and would be an index for the effects of melasma treatment.

Seeing that minimal data has been published on the histological spectrum of patients with melasma, we believe that Wood's light examination to exactly define the clinical-histological patterns of melasma is worthy re-evaluated.

Aim of the Work

The aim of this thesis is to re-evaluate the efficiency of Wood's light examination in establishing the clinicopathologic type of melasma.

Melasma

1. Definition:

Melasma is a common acquired pigmentary disorder characterized by light-brown to dark-brown patches symmetrically distributed on the face, and less commonly on the neck, and the forearms. It typically involves sun-exposed areas in Hispanic and Asian women of childbearing age **(Grimes, 1995).** Additionally melasma commonly affecting Latin American women, particularly with skin phototypes IV–V **(table 1) (Javaheri et al., 2001)**.

Melasma, a name derived from the Greek word melas, means black. Cloasma is a term that has also been used to describe melasma, it is derived from the Greek word cloazein, which means green. According to these facts, hypermelanosis should correctly be designated melasma rather than chloasma **(Sanchez et al., 1981).**

Though it is a frequent, chronic disease, its true incidence is still unknown. UV radiation, hereditary predisposition, hormonal dysfunction and a combination of these factors may trigger the disorder **(Mosher et al., 1999; Ortonne et al., 2009).**

Table (1): Fitzpatrick's classification of sun-reactive skin types **(Fitzpatrick and Ortonne, 2003)**

Skin type	Reaction to Moderate sun exposure *	Skin Color
I	Burn, no tan	Pale white
II	Burn, minimal tan	Pale white
III	Burn, then tan well	White
IV	Tan, no burn	Light brown
V	Tan, no burn	Brown
VI	Tan, no burn	Dark brown

*Thirty minutes unprotected sun exposure i.e. without sunscreen, in peak season (spring or summer).

2. Epidemiology:

Melasma is common in child-bearing age **(Sarkar et al., 2010).** Skin types IV through VI, especially Hispanics and Asians, from areas of world with intense sunlight exposure are vulnerable to melasma **(Sanchez et al., 1981)**.

In a study of melasma in Singapore **(Goh and Dlova, 1999)**, 90% of the patients had skin phototypes III and IV. In Santiogo **(Abaraca, 1987)** melasma was found to be rare in skin phototypes I and II.

Centrofacial pattern has been found to be the most common clinical presentation followed by malar pattern **(Kang et al., 2002).**

The mean age at onset was 34 years, 48% of them had a family history of melasma (97% in a first degree

relative), patients with family history of melasma tended to have darker skin (90% types III-VI) compared to those without (77% types III-VI) melasma **(Sehgal et al., 2011)**.

The most common period of onset of melasma is post pregnancy (42%), often years after the last pregnancy, while 29% have an onset of pre pregnancy and 26% during pregnancy. Onset is related to darker skin type and post pregnancy. Risk of onset during pregnancy is higher in outdoor workers (an extra 10 hour per week spent working outside increases the odds of onset of melasma during pregnancy by approximately 27%) and those with increased maternal age. The frequency of melasma is directly proportional to number of pregnancies (twice the odds if 2 vs. 1 pregnancies, three times higher if 3 or more vs. 1 pregnancy). Twenty-five percent of those using hormonal contraception claimed the onset of melasma after their use **(Ortonne et al., 2009)**.

Melasma in male: A population-based survey **(Pichardo et al., 2009)** showed the prevalence of melasma 14.5% among male Latino migrant workers in the United States. In clinic-based samples among melasma patients in India, men represent 20.5%–25.83% of the cases **(Sarkar et al., 2003; Sarkar et al., 2010)**. It is generally recognized to be