

The Description of Wood's Lamp and Dermoscopy on Patients suspected of Melasma in Adam Malik Hospital Medan

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Abstract- Background: Melasma is a common hypermelanosis condition that often occurs in areas of the skin that are often exposed to sunlight and the most common predilection on the face. The description of melasma lesions is often difficult to distinguish from exogenous ochronosis which can lead to misdiagnosis and treatment. Wood's light examination and dermoscopy are diagnostic tools that are often used in cases of melasma because they are non-invasive compared to histopathological examination by skin biopsy.

Objective: To diagnose and classification of melasma based on examination of Wood's lamp and dermoscopy.

Methods: This is a descriptive case series study, the subjects are suspected melasma patients in Cosmetic Division of Dermatology and Venereology Outpatient Clinic of Adam Malik Hospital. This research was conducted for 2 months with a total of 30 samples that had been performed dermoscopy and Wood's lamp examinations.

Results: From total 30 patients suspected of melasma in this study 24 patients (80%) with a final diagnosis of melasma and 6 patients (20%) with Exogenous Ochronosis. The most type of melasma through wood lamps was epidermal melasma in 19 samples (79.2%). Dermoscopic examination showed the most melasma with homogeneous brown color of 15 samples (62.5%). Besides dermoscopy can also be used to detect early the presence of okronosis in patients suspected of melasma (6 of 30 samples) with typical features of telangiectasis and worm-like pattern.

Index Terms- melasma, wood's lamp, dermoscopy.

I. INTRODUCTION

Melasma is a general condition of hypermelanosis that typically occurs in areas exposed to sunlight on the face. Melasma is a pigmentation disorder that is characterized by symmetrical hyperpigmented macules on the face that often occur in women of childbearing age, although it can also occur in men.¹

The accurate prevalence rate of melasma throughout the world is unknown. According to the American Academy of Dermatology, melasma affects 5-6 million people, most of whom are women in the United States. The highest incidence is owned by women with darker skin types (Fitzpatrick III-V) and most patients are of Hispanic, Latin American, Asian, Central European

and African races and the prevalence of melasma in Southeast Asia is 40%.²

In the Department of Dermatology and Venereology Adam Malik Hospital, Medan for the diagnosis of melasma is commonly using clinical examination and Wood's lamp. The current Gold Standard examination for melasma is a skin biopsy. However, because it is invasive, patients often refuse to do skin biopsy. Ponzio et al in 2003 assessed Wood's lamp to have a low accuracy (46%) compared to histopathology in identifying patterns and classification of 61 melasma patients.^{2,3}

Dermoscopy is a new diagnostic tool in melasma cases, a noninvasive method that was initially used to observe and diagnose skin pigmentation lesions such as melanocytic nevi and melanomas with a diagnostic accuracy of 65-80%. Liu et al in 2014 and Manjunath et al in 2016 stated the use of dermoscopy in cases of melasma can help determine the classification of clinical types of melasma in more detail than the examination of wood lamps because it gives a clearer picture and better contrast colors and can detect it early for abnormalities. such as Exogenous Ochronosis (EO), which is often difficult to distinguish from wood lamp examination.^{3,4}

The purpose of this study was to evaluate the picture of Wood lamps and dermoscopy in patients suspected of melasma at Adam Malik General Hospital Medan. The specific purpose is to find out the profile and determine the clinical type classification of melasma patients based on the examination of Wood's lamp and demoscopy in the Medical Cosmetics Division of Department of Dermatology and Venereology Adam Malik Hospital Medan.

II. METHODS

The study was conducted in a descriptive case series, through basic data, history taking, physical examination, dermoscopy examination results, and Wood's lamp. Obtained a sample of 30 patients with the criteria of the study population are all patients suspected of melasma in the skin clinic RSUP.H. Adam Malik Medan. The sample in this study were patients with suspected melasma who clinically met the following sample acceptance criteria: women aged ≥ 20 years and willing to participate in the study by signing an informed consent. Criteria for rejection of samples are patients with pregnancy and breastfeeding, hypermelanotic lesions on the face besides melasma. The study was conducted in December 2019 until the

number of samples were fulfilled in the Medical Cosmetics Division of Department of Dermatology and Venereology Adam Malik Hospital Medan.

melasma and 6 people (20%) with Exogenous Okronosis (OE). the most female sex and age group is 30-49 years (75%).

The main complaint of 24 melasma patients in this study was brownish spots on the face. The area of predilection of most lesions was on the face with a malar pattern of 14 people (58.4%), centrofasial of 10 people (41.6%). (Table 1)

III. RESULTS

Based on 30 research samples it was suspected that melasma was found 24 people (80%) with a final diagnosis of

Table 1. Distribution of melasma based on the type of clinical appearance

Type of clinical appearance	n	%
Centrofasial	10	41,6%
Malar	14	58,4%
Mandibular	0	0%
Total	24	100%

Based on the wood lamp examination, the highest type of melasma was obtained, namely epidermal types as many as 19 people (79.2%) and dermal types as many as 5 people (20.8%). (Table2)

Risk factors for using contraceptives (birth control pills and injections) were found in all melasma samples. The use of bleaching agent was found in 21 patients (87.5%). (Table 3).

Table 2. The distribution of melasma is based on the depth of the lesion from wood lamp examination

Depth of the lesion	n	%
Epidermal	19	79,2%
Dermal	5	20,8%
Mixed	0	0%
Total	24	100%

Table 3 Risk Factors for Skin Hyperpigmentation Abnormalities in Melasma Patients

Risk Factors	n	%
History of using contraceptives		
- Using contraceptive	24	100%
- Never use	0	0%
History of Using of bleaching agent		
- Using bleaching agent	21	87,5%
- Never use	3	12,5%
Total	24	100%

From the results of dermoscopy examination in this study, the results showed that most dermoscopic images were homogeneous brown color of 15 people (62,5 %), then faded

brown color for 7 patients (29.2%) and homogeneous dark brown color for 2 patients (8.3%) (Table 4).

Table 4. Dermoscopic Examination Results in Melasma Patients based on the degree of color

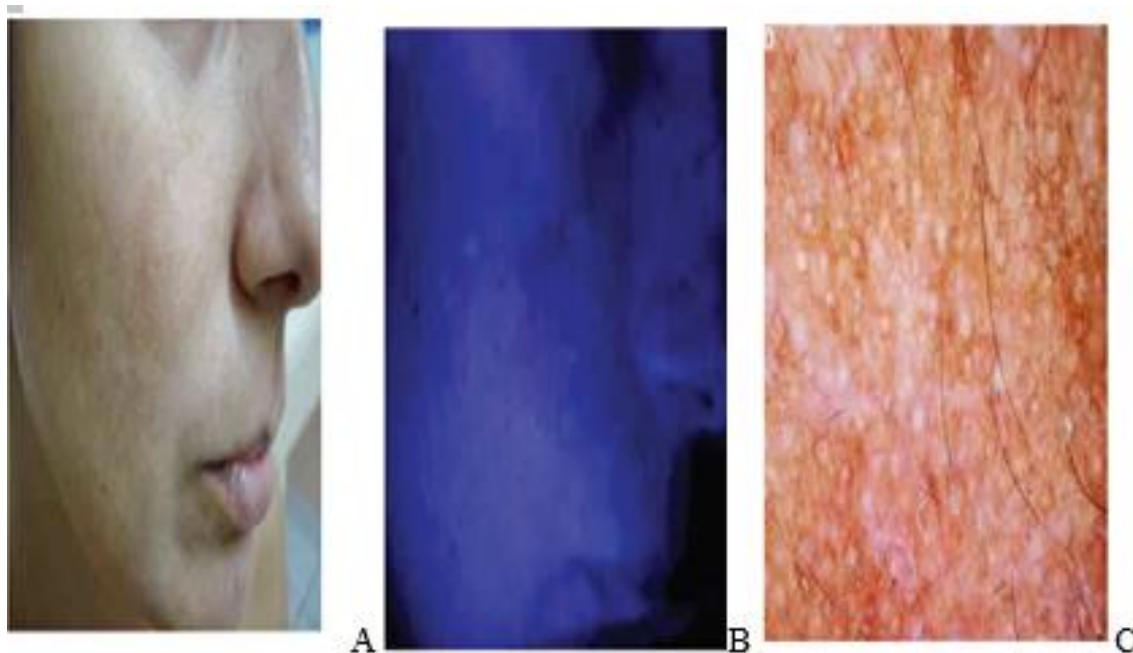
Dermoscopic Examination	n	%
Degree of color		
- Homogeneous brown color	15	62,5%
- Faded brown colour	7	29,2%
- Homogeneous dark brown color	2	8,3%
Total	24	100%

The results of dermoscopic examination of lesions suspected of melasma obtained a typical picture of EO in 6 of 30 samples (20%), with the most characteristic description, namely: 2 samples (33.3%) showed a picture of telangiectasis, 2 samples (33.3%) showed telangiectasis, dark brown and 2 samples (33.3%) showed telangiectasis, worm-like-pattern.

In the examination of wood lamps found 3 patients (50%) with no clearly demarcated contrast and 3 patients (50%) contrast could not be assessed. On dermoscopy examination found better results in distinguishing melasma and EO compared to wood lamps. (Table 5)

Table 5. Dermoscopy and Wood Lamp Examination Results in Exogenous Ochronosis Patients

Dermoscopy examination	n	%
- Telangiektasis	2	33,3%
- Telangiektasis, dark brown	2	33,3%
- Telangiektasis, worm like pattern	2	33,3%
Wood lamp Examination	n	%
- no clearly demarcated	3	50%
- contrast could not be assessed	3	50%
Total	6	100%



Picture 1. Examination of epidermal melasma by: A. Clinical Appearance B. Wood Lamp C. Dermoscopy

IV. DISCUSSION

This study obtained patient data of 30 samples. All with female gender..

The largest age group is 30-49 years (75%) with an average age of 44.1 years, with the youngest age 33 years and the oldest 62 years. This is the research of Umborowati et al with the most age groups, namely 30-55 years by 43%.⁵

The main complaint of patients is brownish spots on the face and symmetrical skin. Melasma is a dysfunction of melanogenesis obtained with clinical manifestations of macular hyperpigmentation, brownish, reticular patterned, symmetrical, chronic on the skin, in areas of sun exposure, especially regarding women with darker skin tones or Fitzpatrick III-VI skin types.^{1,6,7}

The etiopathogenesis of melasma is not yet fully known, it is thought that many factors from the internal and external environment are involved in the course of the disease. Some of the most important factors are genetic predisposition, sun exposure, hormonal, cosmetics and age.^{7,8} The main risk factors in this study besides sun exposure. Is the use of contraception and the use of face whitening creams or bleaching agents.

In this study, in the group of melasma patients found all (100%) had a history of hormonal contraceptive use with pill types as much as 87% and others using pills and injections as much as 13%. This can be explained that the factors of estrogen, progesterone, MSH (Melanocyte Stimulating Hormone), and ACTH (Adrenocorticotrophic Hormone) are important factors in the emergence of melasma, although the levels are not always elevated in patients with melasma. Estrogen plays a direct role in

melanocytes as one of its receptors in the skin. During pregnancy, the balance of hormones in the body also changes. During pregnancy, there is an increase in pigmentation in 90% of women and most are more prominent in darker skin types. Therefore in this study pregnant women were included exclusion criteria.^{9,10}

Various studies evaluating hormonal features in patients with melasma have found significant increases in luteinizing hormone and low values of serum estradiol show subclinical evidence of mild ovarian dysfunction. No significant relationship has been reported between autoimmune thyroid and melasma, especially developing in women with conditions during pregnancy, or after ingestion of oral contraceptive drugs.^{9,10}

The results of the same study conducted by Suhartono in Semarang also showed that of 182 hormonal contraceptive users, the use of oral contraceptives was less (17 people) than injecting contraception (94 people) and implants (71 people), but the incidence of melasma due to use oral contraceptives are higher than hormonal contraceptives, which is 35.5%.¹¹

A history of using bleaching agent in 21 people (87.5%). Most of the active ingredients in over-the-counter bleaching agents are hydroquinone, super-potent topical steroids, and mercury. Inappropriate use of whitening creams has consequences of side effects, one of which is EO.^{9,12}

From this study it was seen that the type of malar is the type of clinical picture that is most often found, as many as 14 people (58.4%). This study is the same as seen in the study of Umborowati et al. In melasma patients showing that most melasma predilection was in malar in 824 patients (62.7%) followed by centrofacial as many as 523 patients (39.8%) and mandibular in 53 patients (4.0%).⁵ The study of Jagannathan et al also showed the distribution of melasma in 80 women with melasma who underwent clinical examination found malar type 65%, centrofacial 26.25%, mandibular 8.75%.¹³ whereas different results in Krupashankar et al's research found type centrofacial 45% and malar type 39%.¹⁴

On examination of wood lamp found that the most is epidermal type melasma 79.2% and dermal type 20.8%. Jagannathan et al's research found that in the examination of Wood's lamp there were 48.75% epidermal types, 20% dermal types, 28.75% mixed types and 2.5% unclear types.¹³ Research by Reddy et al also showed the same thing, epidermal type 47%, dermal 34% and mixed 20%.¹⁵

The epidermal type will appear to increase fluorescence and color boundaries are clearly demarcated. Melasma type of dermal fluorescence decreases with indifferent boundary accentuation, whereas mixed type there is a melanin deposit in the epidermis and dermis layers causing an increase in color in some areas.^{2,16} Ponzio and friends in 1993 assessed the validity of Wood's lamp to identify the pattern of melasma compared to the melasma pattern compared to histopathology, showing a level of sensitivity, low specificity, and low accuracy (46%) in all three types of melasma pathology.^{16,17}

On the dermoscopy examination in this study obtained the majority (62.5%) with homogeneous brown colors, followed by 29.2% with faded brown color and the lowest (6.3%) with homogeneous dark brown colors. Based on the score, it was found that most (70.8%) with a score of 4 and others with a score of 3 were 29.2%.

The use of dermoscopy techniques consists of 2 types, namely contact and non-contact. In this study using DermLite® 3N / HR (High Resolution) type dermoscopy which has advantages can be used with contact and non-contact techniques. Researchers used non-polarizing-contact techniques. Polarizing non-contact dermoscopy unlike contact dermoscopy, it can visualize deeper structures (blood vessels) more clearly, does not require excessive contact which can cause direct pressure on the lesion so as to prevent the effect of skin from appearing pale.^{16,17}

In a comparative study between dermoscopy and Wood's lamp in the classification of melasma, dermoscopy is assumed to be more applicable, more precise, and helpful in routine diagnosis, assessment, and monitoring of patients with melasma. Dermoscopy can objectively classify melasma based on the color of the observed pigment.^{4,17}

On dermoscopic examination in patients suspected of melasma, EO lesions were found 2 samples (33.3%) showed a picture of telangiectasis, 2 samples (33.3%) showed dark brown telangiectasis and 2 samples (33.3%) showed worm-like telangiectasis -pattern. In the examination of wood lamps found 3 patients (50%) with no clearly demarcated contrast and 3 patients (50%) contrast could not be assessed. On dermoscopy examination found clearer results in distinguishing melasma and EO compared to wood lamps. This is in accordance with the research of Shihab et al at Cipto Mangunkusomo Hospital where dermoscopic examination can be more clearly distinguished between melasma and dermoscopic images of lesions in the form of light and homogeneous browns compared to EO which is dark brown in color, which can help avoid invasive actions such as skin biopsy which many patients refuse to do.¹⁷

V. CONCLUSION

From this study it was found that in patients suspected of melasma there were a number of risk factors other than sun exposure, namely in the form of use of contraceptives (birth control pills and injections) and the use of face whitening creams which are sold freely on the market that contain mercury and inappropriate use of steroids.

With the use of appropriate support tools can help establish a diagnosis of melasma, such as the use of dermoscopy which gives a clearer picture of the state of certain melasma compared to wood lamps, especially to distinguish it from EO.

However, this study still has several limitations: first, it requires repeated practice for dermoscopic examination in melasma because there is still subjectivity in reading the results. Secondly, this study is only descriptive in nature and is not compared with histopathological examination, so that it cannot be assessed the sensitivity and specificity of dermoscopy, and it cannot be stated that dermoscopy is better, more objective / accurate than Wood's lamp. Further research in the form of analytics using histopathology as the gold standard should be carried out. Dermoscopy can be an alternative to routine clinical examination of melasma because it can observe telangiectasis and early detection of EO in melasma lesions that cannot be observed with Wood's lamp.

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