INTRODUCTION

Dermatoscopy, also known as epiluminescence microscopy, is a noninvasive diagnostic tool allowing rapid and magnified in vivo observation of the skin, with the visualization of morphologic features invisible to the naked eye. It is performed with manual devices, which do not require any computer assistance, and generally employs x10 magnifications ***(Lacarrubba et al., 2010).*** Video dermatoscopy represents the evolution of dermatoscopy and is performed with a video-camera equipped with lenses providing magnification ranging from x10 to x1000 ***(Micali et al., 2003).***

Dermatoscopy is a valuable tool for evaluating pigmentary lesions, and it greatly enhances the clinical diagnosis of nearly all pigmented skin tumours ***(Zalaudek et al., 2006).*** Moreover, the use of dermatoscopy has been extended to the diagnosis of non-pigmentary skin disorders by defining the characteristic vasculature ***(Micali et al., 2011).***

Psoriasis and seborrhoeic dermatitis are relatively common chronic inflammatory skin disorders that present with well-defined, erythematous scaly plaques/patches. These diseases share common clinicopathological features, but they present with some apparent differences when examined in detail. Psoriasis usually presents with thick silvery-white plaques on the scalp, trunk and limbs, especially on the extensor surface of the extremities. The diagnosis of psoriasis is

facilitated by the presence of characteristic nail changes (nail pitting, subungual hyperkeratosis, onycholysis etc.) or the Auspitz sign ***(Griffiths et al., 2010).***

In seborrhoeic dermatitis, the lesions are lighter in colour, less well defined and covered with greasy-looking scales, most commonly on the scalp, nasolabial folds, ears, eyebrows and chest ***(Gupta et al., 2004)***. Another feature that aids in differentiating the two diseases is the involvement of the frontal hairline, which is more common in psoriasis than in seborrhoeic dermatitis. When both conditions are localized only on the scalp, a skin biopsy may be helpful for diagnosis. In some cases, however, even a biopsy cannot provide the accurate information necessary for differentiation ***(Kim et al., 2011).***

Over the years, the role of dermatoscopy in the study of psoriatic lesions has gained increasing importance because of the identification of peculiar vascular patterns ***(De Angelis et al., 2002).*** Identification of various vascular patterns can be helpful in addressing the diagnosis especially in unusual presentations, such as in palmar and/or plantar psoriasis, psoriatic balanitis, and scalp psoriasis, particularly in those cases in which no other body sites were involved**.** On the other hand, there is a scarce data in the literature addressing the dermatoscopic features of seborrhoeic dermatitis ***(Micali et al., 2010).***

Furthermore, the differentiation between dermatoscopic features of both psoriasis and seborrhoeic dermatitis has not been previously thoroughly addressed ***(Kim et al., 2011).*** Therefore, we believe that the clinical relevance of dermatoscopy for differentiating psoriasis from seborrhoeic dermatitis worthy to be investigated to evaluate its role as a non-invasive diagnostic tool in troublesome cases.

AIM OF THE WORK

The aim of this study was to evaluate the role of hand-held dermatoscopy in differentiating psoriasis from seborrheic dermatitis and to correlate these findings with the histopathological features.

DERMATOSCOPY

Dermatoscopy is diagnostic method, which is becoming increasingly reliable and, as a consequence, increasingly popular among dermatologists and patients. Especially in the field of pigmented skin lesions (PSLs), dermatoscopy may add useful information to the clinical constellation, which enables the early diagnosis of melanoma ***(Unqureanu et al., 2013)*** and for differentiating various melanocytic and non-melanocytic pigmented lesions. This method has various other potential applications besides diagnosis, including lesion's selection for biopsy, determination of appropriate therapeutic modalities, verification of treatment efficacy, and decision of surgical margins ***(Kadurina and Dimitrov, 2005).***

Dermatoscopy has been known by a variety of names, including skin surface microscopy, epiluminescence microscopy, incident light microscopy and dermoscopy ***(Argenziano et al., 2003).***

- **Scientific background:**

A dermatoscope is functionally similar to a magnifying lens but with the added features of an inbuilt illuminating system, a higher magnification which can be adjusted, the ability to assess structures as deep as in the reticular dermis, and the ability to record images (Fig. 1) ***(Nischal and Khopkar, 2005).***

Most of the light incident on dry, scaly skin is reflected, but smooth, oily skin allows most of the light to pass through it, reaching the deeper dermis. This principle has been harnessed to improve the visibility of subsurface skin structures by employing application of linkage fluids over the lesions to be studied to improve the translucency of the skin ***(Giuseppe et al., 2010).***

Many different immersion fluids have been used, including water, alcohols like ethanol and isopropanol, oils like, mineral oil, immersion oil and olive oil ***(Sayer et al., 2001)*** water, antiseptic solutions and glycerin. Immersion oil is not used anymore because it contains chlorinated paraffin and dibutyl phthalate, which have teratogenic, fetotoxic, and carcinogenic effects ***(Nischal and Khopkar, 2005).***

Alcohols, due to their low viscosity, amphipathic properties, disinfectant capabilities and most importantly image clarity, are the best immersion liquids to use. 70% ethanol is chosen in offices because it has fewer odors than isopropanol and does not leave crystal deposits after evaporation like alcoholic disinfectants containing chlorhexidine ***(Katz and Rabinovitz, 2001).***

When a light source comes directly from a dermatoscope, the immersion fluid helps render the skin surface translucent and reduce reflection while the application of the dermatoscopic glass plate helps to flatten the skin and provide an even surface ***(Sayer et al., 2001).***

Non-digital dermatoscopy uses this principle allowing direct examination and imaging of the epidermis and papillary dermis ***(Braun et al., 2005).***

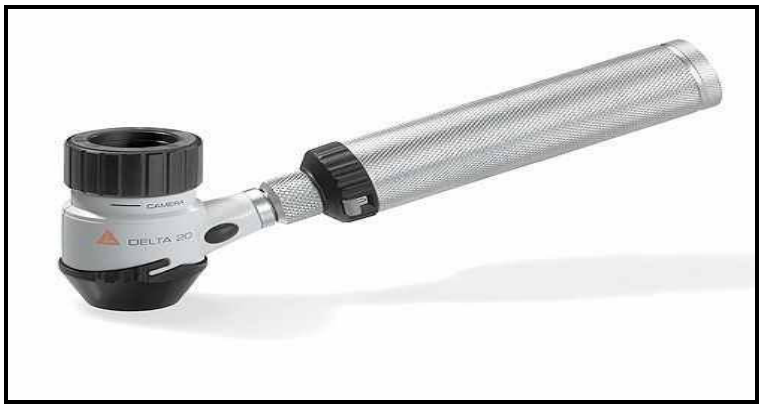

Figure (1): Non-digital dermatoscopy ***(Giuseppe et al., 2010)***.

Dermatoscopy can also be performed using polarized light without the need for fluid immersion. For example, the Dermlite® (Fig. 2) which uses a cross-polarized lens that absorbs surface reflection, while possibly avoiding pressure artifact. The illumination and resolution are lower than fluid immersion dermatoscopy ***(Giuseppe et al., 2010).***

Figure (2): Dermlite®dermatoscopy ***(Giuseppe et al., 2010)*.**

- **Basic design of a dermatoscope:**

1- Achromatic lens: Most instruments provide "x10" magnification, but higher magnifications can be achieved with special lenses ***(Pehamberger et al., 1987)*.**

2- Inbuilt illuminating system: Halogen lamps, which are oriented at an angle of 20, are placed within the handheld piece. The color contrasts of lesions are altered by the yellow light of halogen lamp. Light emitting diodes (LED) (Delta 20©, DermLite©) ***(Nischal and Khopkar, 2005).***

3- Power supply: Handheld instruments are usually powered by batteries, e.g. lithium ion battery (DermLite DL100©, DermLiteplatinum©), rechargeable lithium battery (DermLite MS) ***(Mayer, 1997)*.**

Additional facilities in some dermatoscopes are an inbuilt photography system, either an attachable conventional or digital camera or an inbuilt camera, and supporting software, for the capture, storage, retrieval and even interpretation of images ***(Kittler et al., 2002).***

- **Types of Dermatoscopes:**

1. **Non-digital dermatoscope (Non Polarized Dermatoscopy):** is usually a small hand-held skin surface microscope with magnification fixed. It utilizes an incident light magnification system in combination with oil immersion at the skin dermatoscopic space ***(Bindes et al., 1999).*** The oil removes the normal scattering of light at the stratum corneum rendering the epidermis translucent **(Braun et al., 2002).** The most common IFs in dermatoscopy are synthetic oil, ultrasonographic gel, alcoholic disinfectants or, simply - water ***(Kaminska-Winciorek et al., 2011).***

2. **Digital Epiluminescence Dermatoscopy (Polarized Dermatoscopy):** achieves epiluminescence by cross-polarizing light from LED, which allows for high quantity, high-resolution images without the need of oil. It is polarized linearly by a special filter before reaching the skin. The magnifying lens is also linearly polarized, but aligned at 90° to the first filter. Light reflected from the skin surface is thus cancelled out when it passes through the magnifying

lens. As a result, the viewer sees only light reflecting from deeper layers of the epidermis and the dermoepidermal Junction. Though a fibro-optic light source is necessary for some models. The equipment usually generates a video output, with the signal captured by a video card (Fig. 3) ***(Pallacani and Seidinari, 2002)***.

Figure (3): Foto Finder Dermatoscopy ***(Pallacani and Seidinari, 2002).***

This model is the most recent type of dermatoscopy, which is called Foto Finder Dermatoscopy. It is connected with computer and digital camera. This model offers numerous advantages; Higher magnifications are achievable, usually 30 × 750 ***(Zaballas et al., 2008).***

- **Advantages of Dermatoscopy:**

1. Dermatoscopy can study normal skin in vivo ***(Stolz, 1996).***

2. Easy to use and low cost ***(Soyer et al., 2001).***

3. Dermatoscopy helps to differentiate melanocytic lesions from non-melanocytic and malignant lesions from non-malignant ones. This enables malignancies to be diagnosed at an earlier and much more treatable stage. This helps to avoid unnecessary surgery and improves patient morbidity and mortality ***(Kadurina and Dimitrov, 2005).***

4. Examination with a dermatoscope can reassure the patient that they have received skin examination ***(Stolz et al., 1996).***

5. Determination of appropriate therapeutic modalities and verification of treatment efficacy ***(Kadurina and Dimitrov, 2005).***

6. Lesion's selection for biopsy and decision of surgical margins ***(Kadurina and Dimitrov, 2005).***

7. By using a special lens also lesions located in particular anatomic sites (e.g. interdigital areas) can be observed ***(Soyer et al., 2001).***

- **Dermatoscopic criteria:**

Dermatoscope shows the colors, microstructure, and vascular pattern of the lesions. In assessing dermatoscopic images, both global and local features can be recognized ***(Argenziano et al., 2000).***

1. Global features:

The global features is determined by the predominantly dermatoscopic feature in the lesion that enable its diagnosis ***(Kadurina and Dimitrov, 2005).***

a) Reticular pattern:

In the reticular pattern, there is a predominant presence of regular pigmented network or pigmented network in "honeycomb". Histologically, the lesion presents basal cell layer hyperpigmentation and/or melanocytic hyperplasia, which may correspond to a junctional nevus, compound nevus, lentigo or melanosis ***(Soyer et al., 2001).***

b) Globular pattern:

The presence of multiple aggregated globules prevails in globular pattern. The globules may have different colors (black, brown, blue or gray) depending on how deep (epidermis, papillary dermis and reticular dermis) and in the pigment (melanin). Some lesions have light or pinkish globules with less pigmentation. The globular pattern has high specificity for diagnosis of compound and intradermal nevi ***(Lucas et al., 2003).***

c) Cobblestone pattern:

Globules also predominate in this pattern but they are large, closely aggregated and somehow angulated globule-like structures resembling a cobblestone ***(Rezze et al., 2004).***

d) Homogeneous pattern:

Presence of diffuse and homogeneous blue-grayish pigmentation is observed and absence of pigmented network characterizes the blue nevi ***(Menzies et al., 1996).***

e) Parallel pattern:

This is the pattern found in palmoplantar lesions. Pigmentation along the superficial sulci occurs in 40% of benign palmoplantar melanocytic nevi (parallel furrow pattern); whereas pigmentation along the rete ridge (with presence of eccrine glands) is observed in 86-98% of acral melanomas (parallel ridge pattern) ***(Rezze et al., 2006).***

f) Starburst pattern:

It is characterized by the presence of pigmented streaks or pseudopods regularly distributed throughout the periphery of the lesion and intense pigmentation in the central area, which confers a starburst aspect. It occurs in 53% of spindle and/or epithelioid cell nevi (nevi of Reed or pigmented Spitz nevi) ***(Snels et al., 1999).***

g) Multicomponent pattern:

This pattern has high specificity for diagnosis of cutaneous melanoma and consists of presence of three or more dermatoscopic feature in one single lesion. The characteristics that could be observed are presence of multiple colors, irregular pigmented network and/or hyperpigmented network (prominent), pseudopods, branched streaks, blue-whitish veil, regression areas (depigmentation or peppering), brown or black globules of irregular shape and unevenly distributed within the lesion, peripheral black dots, hypopigmentation or hyperpigmentation (blotches) areas ***(Rezze et al., 2004).***

h) Unspecific pattern:

In some instances, a pigmented lesion cannot be categorized into one of the global patterns, because the overall morphologic aspect does not fit at all any of the global patterns, for this type of lesion the term "unspecific pattern" is used. Although the unspecific pattern has no real diagnostic implication, it is often associated with melanoma ***(Soyer et al., 2001).***

2. Local features:

a) The Pigment network

Pigment network is a web-like structure of brown/black lines and hypopigmented holes that create a "honeycomb pattern". It has been classically described as typical and atypical ***(Massone et al., 2005).*** *Typical network pattern* is characterized by uniform, regular lines and holes, homogeneous colour, and usually fades at the periphery. *While atypical network pattern* shows non-uniform, darker and/or broadened lines with heterogeneous holes in areas or shapes. The lines are often hyperpigmented and end abruptly at the periphery ***(Soyer et al., 2001).***

b) Dots and globules

Dots and globules are defined as small round to oval brown, black or gray bluish structures less than 0.1 mm diameter (dots) or larger than 0.1 mm (globules). Dots and globules are uniform in shape and evenly distributed in benign melanocytic lesions (commonly in the centre of a lesion). In malignant melanomas they show variable size and shape and are frequently found at the periphery ***(Grichnik, 1998).***

c) Streaks or radial streaming

They appear as linear extensions at the edge of the lesion, being called pseudopods when they show knobs at the end of the projections. A symmetric peripheral arrangement