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General dermatology benefits of dermoscopy

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ABSTRACT

Dermoscopy is helpful for assessing vascular structures that are not apparent to the naked eye as well as for improving the diagnostic precision in the clinical examination of pigmented skin lesions. Dermoscopy has subsequently been used more frequently for the differential diagnosis of non-pigmented skin conditions, such as malignancies as well as inflammatory and viral diseases. The dermoscopic characteristics of several nonpigmented tumoral and nontumoral skin lesions are reviewed in this article, along with the dermoscopic standards used to track skin reactions to various therapies.

Keywords: Dermoscopy , Diagnosis, Vessels , Non pigmented , skin lesions

INTRODUCTION

Dermoscopy, a noninvasive diagnostic procedure, bridges the gap between microscopic dermatopathology and macroscopic clinical dermatology by allowing the detection of morphologic aspects that are not visible to the unaided eye. An overview of the distinctive patterns of pigmented skin tumours has been provided in a recent dermoscopy guideline [1]. This

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'sub-macroscopic' observation of the skin is being used for the assessment of pigmented skin tumours.

Dermoscopy is useful for assessing pigmented structures as well as for identifying vascular structures and other minor features that are typically less obvious to the naked eye [2]. As a result, in recent years dermoscopy has been used to assess nonpigmented skin disorders (NPSD), such as nonpigmented skin cancers, as well as viral and inflammatory diseases. Although several publications on the more recent uses of dermoscopy have been written, there has yet to be a summary of all these facts. In order to provide guidelines on the dermoscopic criteria seen in various NPSD, we analysed the literature listed in Pubmed for this paper.

Technical Resources

In order to make the skin surface translucent for the visualisation of the underlying structures, standard hand-held dermoscopes require direct contact of the optical lens with the skin surface using an immersion liquid, such as oil, alcohol, or gel. However, direct skin-to-dermoscope contact should be avoided in order to properly examine vascular architecture because excessive pressure on the dermoscope may cause the capillaries to vanish. Modern hand-held dermoscopes don't need a contact medium between the optical lens and the skin because they employ polarised light. These new hand-held dermoscopes are therefore ideal tools for the dermoscopic evaluation of vascular structures since they enable quick and practical skin examination without physical touch [3-5].

There are four clinical indications for dermoscopy in conditions with non-pigmented skin.

We discovered 61 dermoscopy papers covering a range of different indications in the context of NPSD between 1955 and January 2005 [1-11]. We choose not to add dermoscopy papers that covered the differential diagnosis for pigmented skin malignancies. Due to the uneven distribution of the publications, we categorised the data into the following four groups based on their typical clinical backgrounds.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,Iss 6, Sep 2022

Table 1: Definitions of the additional dermoscopic criteria seen by dermoscopy in non-pigmented skin disorders and their diagnostic significance

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,Iss 6, Sep 2022

Dermoscopic criteria	Defination	Diagnostic significance
Central pigmented ring with a pore in the middle	central pigmented oval area with a plugged opening in the middle [44]	tungiasis
Colarette scaling	fragments of scales are attached at the periphery hanging like curtains [13]	pityriasis rosea
Linear filariform brownish structures	filariform, convoluted body of the larva [45]	cutaneous larva migrans
Giant pseudocomedones	dilated openings with raised or flat borders and a central brown to yellow hyperkeratotic plug [23]	Darier's disease
Jet with condensation trail	triangular brown homogeneous pigmentation at the anterior part followed by a linear distal whitish trail [15]	scabies
Reticular whitish striae	whitish lines in a reticular distribution (related to Wickham striae of lichen planus); in mature lesions additional radial capillaries inter-mingled with the reticular striae can be seen; in regressing lesions the vascular component disappears and gray blue dots with or without reticular striae become visible [22]	lichen ruber planus
Remnants of pigment	Small areas showing either remnants of a pigmented network and/or homogeneous often bluish to brownish pigmented occupying less than 10% of the lesion [1]	hypomelanotic melanoma
Scales	white homogeneous structures [38]	keratinizing skin disorders
Tanned patches	pigment-related slightly hyperchromic patches [8]	bowenoid papulosis, urticaria pigmentosa
Ulceration	brown to reddish homogeneous structureless areas [38]	unspecific, can occur in any skin lesion that is ulcerated

(1) Dermoscopy of single lesions of non-pigmented skin cancers.

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Research paper UGC CARE Listed (Group -I) Journal Volume 11,Iss 6, Sep 2022

(2) Dermoscopy of infectious or inflammatory disorders (primarily multiple lesions).

(3) Dermoscopy of the nail fold in autoimmune disorders.

(4) Dermoscopy, which focuses particularly on treatment response and/or side effects, is used to forecast and/or monitor skin reactions.

The separation into the first two classes is based on the fact that skin cancers are typically represented by solitary lesions, whereas inflammatory/infectious lesions are frequently plural and/or involve significant skin area. Dermoscopy of the nail fold is classified as a special type of examination because it is only carried out when an autoimmune illness is already suspected clinically. In contrast to the first three categories, dermoscopy utilised in the fourth group is used to track therapy response and/or reactions rather than primarily serving a diagnostic purpose.

The published research ranged from a collection of examples to a single observation within these 4 categories. For studies involving 10 cases or more, we used the term "series," while for observations involving fewer than 10, we used the phrase "single." Table 1 defines the different vascular patterns that can be seen by dermoscopy, whereas Table 2 lists the other dermoscopic aspects that have been discussed in NPSD. It list several NPSD and their associated dermoscopic criteria, along with the relevant references.

A method for dermoscopically diagnosing non-pigmented skin conditions. We recommend utilising the following algorithm for the dermoscopic diagnosis within the first two categories of NPSD based on the examination of the data.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,Iss 6, Sep 2022

The following gives a concrete illustration of how the dermoscopic method can be used to distinguish NPSD: By dermoscopy, dotted vessels in psoriasis [7–13] and amelanotic melanoma [3–7] may both be seen. However, this extremely dangerous skin tumour can be distinguished from the benign psoriasis plaques by the clinical characteristics of a single lesion in the former and the typical placement of many lesions in the latter. Contrarily, amelanotic melanoma [3-7] and clear cell acanthoma [3,10-12] can occasionally be difficult to tell apart based on their outward appearance, but when examined under a microscope, these tumours show distinct types and arrangements of vessels, making a diagnosis with increased confidence possible.

When examining NPSD, it is also necessary to evaluate any additional features that may potentially be seen by dermoscopy . For instance, it has been demonstrated that the so-called ‘jet with condensation trail; is very useful for the diagnosis of scabies [15-19], and as a result, dermoscopy has taken the place of the slower method of skin scraping in our department. Since the dermoscopic examination of the afflicted hairs provides a sufficient magnification for distinguishing pediculus hominis and pthyrius pubis, dermoscopy can also be utilised to diagnose pediculosis capitis and pubis. Dermoscopic examination of psoriasis lesions [7–13], porokeratosis lesions [20], pityriasis rosea lesions [8,13,21], lichen planus lesions [8, 9,22], and Darier disease lesions [23] frequently shows certain criteria that may be helpful in some, clinically ambiguous situations.

It must be emphasised that the clinical data, such as the patient's history, clinical characteristics, or laboratory findings, are typically sufficient for making a diagnosis of diseases like drug rashes, erythema exudativum multiforme, morphea, necrobiosis lipodica, perniones, panniculitis, and urticaria. Dermoscopy does not appear to have a significant diagnostic influence on these illnesses [8]. Dermoscopy cannot substitute standardised testing (i.e. laboratory, radiographic, and histopathologic investigations) to carry out diagnosis and/or to rule out afterwards related internal diseases in skin disorders such livedo reticularis, sarcoidosis, or Sweets syndrome [8].

The Impact of Dermoscopy in the Treatment Evaluation

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,Iss 6, Sep 2022

Dermoscopy has lately been used for monitoring skin reactions to treatment and/or treatment response in addition to its diagnostic uses. Pretreatment dermoscopic examination enables clinicians to quantify and predict the response to laser treatment in patients with port-wine stains (PWS). It has been proposed that the venous plexus of PWS, which on dermoscopy exhibits dotted and/or globular patterns without a gray-whitish veil, is specifically found in the upper dermis, indicating a favourable response to laser therapy.

A gray-whitish veil, on the other hand, indicates that the venous malformation is located in the deeper layers of the dermis and that the outcome of treatment is uncertain [16,17]. Dermoscopy has also been used to assess the effectiveness of treatment in patients with scabies [19], vitiligo [18], hair loss [24-27], and basal cell carcinoma [22], as well as for the non-surgical topical and systemic treatment of Kaposi sarcoma. According to our experience, the documented characteristics of regressing lichen ruber planus (i.e.,numerous little grey dots) [8,9] are helpful for controlling therapy response in addition to serving as a diagnostic tool.

It's interesting to note that dermoscopy's benefits for these later reasons have been shown in fields other than dermatology, such urology or cardiovascular care. For instance, dermoscopy was used to evaluate the local acceptability of antiseptic treatments for the genitals using criteria such as reddening, erosions, and microbleeding [27-29]. In a different study, the dermoscopic findings of the skin on the stumps of patients with prothesis tolerance and intolerance were compared, revealing significant differences in terms of microvascular changes (larger capillary loop calibre, micro-aneurysms, micro-hemorrhages, and increased neoangesis) in the prothesis tolerance group [30]. We assume that these vascular anomalies are evident with regular handheld dermoscopes even though the findings were reported using videomicroscopy.

CONCLUSION

Dermoscopy is being utilised more frequently in general dermatology as an addition to the clinical assessment. Dermoscopy in the context of NPSD enables the visualisation of particular characteristics, enhancing the diagnostic toolbox. However, for the majority of the reported symptoms, its significance has to be further demonstrated. This is especially true when only a

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single observation has been reported or when later reports haven't confirmed the initial findings [36]. According to our personal experience and critical analysis, dermoscopy cannot succeed over clinical information such as the patient's history, clinical features, or typical laboratory, radiographic, and histopathologic findings in some of the diseases listed above, and it cannot replace the traditional methods of performing a diagnosis [8]. Despite these drawbacks, it is reasonable to anticipate that dermoscopy will eventually become a standard diagnostic tool for all dermatologists, assisting them not only in the differentiation of pigmented skin lesions but also in the interpretation of various skin issues in the context of general dermatology.

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