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REVIEW ARTICLE

The Role of Dermoscopy in Rosacea Diagnosis. A Review of the Literature

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Abstract

Background. Rosacea is a chronic inflammatory skin disorder that manifests as persistent facial redness, papules, and pustules on the background of telangiectasia. Diagnosing it is often challenging because its symptoms overlap with skin conditions like seborrheic dermatitis and acne. Accurate diagnosis is important for effective management.

Aims. This review aims to assess the role of dermoscopy as a non-invasive diagnostic tool in improving the accuracy of rosacea diagnosis and its subtypes.

Materials and Methods. The review focuses on the characteristic follicular and vascular features detectable through dermoscopy and identifies key dermoscopic features of rosacea, such as polygonal vessels, follicular plugging, and Demodex mites. These findings were assessed in the context of differentiating between the various subtypes of rosacea, including papulopustular, erythematotelangiectatic, phymatous, and granulomatous.

Results. The review revealed that dermoscopy significantly enhances the diagnostic precision of rosacea by revealing specific vascular and follicular patterns that are otherwise difficult to detect through clinical observation alone—furthermore, dermoscopy aids in classifying rosacea into its specific subtypes. This improved diagnostic accuracy can lead to better clinical outcomes and more effective treatment monitoring for patients with rosacea.

Keywords: Dermoscopy, Rosacea Diagnosis.

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INTRODUCTION

Rosacea is a chronic inflammatory skin condition that predominantly affects the face. It is characterized by persistent erythema, papules, and pustules on the background of telangiectasia [1]. Although the exact etiology remains unknown, the condition is thought to involve neurovascular, immune dysregulation, and Demodex mites [2]. Rosacea commonly overlaps in presentation with other conditions, such as acne and seborrheic dermatitis, making accurate diagnosis on clinical background difficult, especially for less experienced clinicians [3].

Dermoscopy has become an important diagnostic tool, allowing clinicians to visualize critical features such as yellow dots, polygonal vessels, and follicular pustules. These are particularly useful in distinguishing rosacea from other facial dermatoses, such as acne and seborrheic dermatitis [3]. Acne lesions often exhibit open and closed comedones [blackheads and whiteheads). Subsequently, this can be demonstrated by dermoscopy as small, round openings representing open comedones or whitish globules for closed comedones. Unlike rosacea, acne generally lacks prominent vascular structures [4]. Dermoscopy of seborrheic dermatitis typically shows greasy, yellowish-white scales over an erythematous background, often around hair follicles surrounded by common scales, giving a characteristic pattern, and with a lack of vascular network [5].

Dermoscopy offers a noninvasive tool to visualize skin structures and vascular patterns, potentially enhancing the accuracy of rosacea diagnosis [6]. This review aims to present an overview of the role of dermoscopy in diagnosing rosacea by highlighting recent advancements and the distinctive dermoscopic features of rosacea.

METHODOLOGY

This study conducts a literature review to evaluate the role of dermoscopy in diagnosing rosacea and differentiating its subtypes. Over the last few years, few studies from diverse geographic regions have explored the diagnostic power of dermoscopy, focusing on dermoscopic patterns such as linear vascular structures, follicular plugging, and Demodex tails. Subtype-specific features such as polygonal linear vessels in erythematotelangiectatic rosacea and follicular pustules in papulopustular rosacea were examined. Studies not published in peer-reviewed journals, lacking high-quality imagery, or involving overlapping cases (i.e., hard-to-categorize diagnoses) were excluded. Studies varied from observational, cross-sectional, and retrospective designs to prospective evaluations. The data extraction focused on dermoscopic features, such as follicular plugging, vascular structures, peri-follicular scales, and other structures.

RESULTS

Recent advancements in the study of dermoscopic features associated with the various subtypes of rosacea have provided valuable insights into the unique structural and vascular patterns that help to reach an accurate diagnosis and proper management and treatment strategies. A large study [3] involving 495 patients with rosacea examined by dermoscopy revealed key features, including the proportion of red, yellow, and red halos, vascular polygons, and follicular pustules. Additionally, Demodex mites were found in patients' skin with rosacea, emphasizing their role in the pathogenesis of rosacea. The diagnosis of Demodex can be made through standardized skin surface biopsy. Still, dermoscopy offers a non-invasive tool for diagnosing Demodex proliferation in various dermatological diseases, including rosacea. In a related study [7], researchers explored the relationship between dermoscopic features of demodicosis and the results of standardized skin surface biopsy in patients with rosacea, aiming to compare the dermoscopic features of rosacea in

Demodex-positive and negative samples and Demodex type. A total of 30 patients were included in the study. Demodex was detected in 60.2% of the samples. These findings underscore the utility of dermoscopy as a real-time validation of Demodex infestation and a valuable tool for monitoring treatment [8].

Further investigations [9] have focused on differentiating the dermoscopic features of specific types of rosacea compared with one important differential diagnosis, such as systemic lupus erythematosus (SLE) [9]. Malar rash is an important clinical finding in both conditions. The differential diagnosis of erythematotelangiectatic rosacea from SLE may sometimes be challenging. The main dermoscopic features of malar rash were reddish/salmon-colored follicular dots surrounded by white halos ('inverse strawberry' pattern), present in 53.9% of the cases. At the same time, network-like vessels (vascular polygons) became the main feature of erythematotelangiectatic rosacea. This comparative analysis revealed that the 'inverse strawberry' pattern was significantly more common in SLE. At the same time, while in rosacea, vascular polygons were more significantly frequent, aiding clinicians in differentiating between the two conditions.

More details about other types of rosacea have been studied [10,11], and little is known about phymatous rosacea. Hence, a significant study [10] aimed to summarize and compare the dermoscopic features of three rosacea subtypes (erythematotelangiectatic [ETR], papulopustular [PPR], and phymatous [PHR])- in a cohort Chinese Han population. The common dermoscopic features of PHR were orange diffuse structureless areas with linear vessels with branches, perifollicular white color, orange structureless areas, and white lines. The remarkable orange diffuse structureless areas, linear vessels with branches, perifollicular white color, orange focal structureless areas, and white lines characterize PHR.

Another recent analysis [12] involving 85 patients with rosacea-related facial lesions was conducted in medical centers in Greece and Italy. All individuals with the erythematotelangiectatic (ETR) subtype exhibited a regular distribution of linear reticular vessels, and 80% showed erythema. A similar but less intense vascular pattern was observed in the papulopustular subtype, along with follicular plugs and pustules. Linear vessels were identified in 53.8% of cases, while 38.5% displayed linear, branched vessels in a reticular pattern. Phymatous rosacea featured various morphologic types of vessels in a reticular formation, along with yellow follicular clods. Granulomatous rosacea showed structureless focal orange areas in all cases, with perifollicular orange discoloration noted in most. Linear or linear branched vessels in a reticular arrangement with a regular or patchy distribution were also noted in the granulomatous subtype. Another study [13] included rosacea patients and confirmed the previous findings. Clinically, all patients were presented with telangiectasias. They are seen more clearly and specifically with dermoscopy as red dilated, reticular, linear, tortuous, or polygonal vessels.

DISCUSSION

Rosacea is a chronic inflammatory skin disease that predominantly affects the face. It is characterized by various clinical subtypes and overlapping features, making it challenging to diagnose, manage, and differentiate it from other dermatoses, such as acne and seborrheic dermatosis [1-3].

Clinically, the condition is characterized by persistent erythema, papules, and pustules on the background of erythema [1]. The emergence of dermoscopy as a diagnostic tool has revolutionized the non-invasive evaluation of rosacea [6]. Dermoscopy enhances our understanding of rosacea subtypes and their

pathophysiology by revealing structural and vascular patterns not easily visible to the naked eye, contributing to more accurate diagnosis and treatment strategies.

Recent studies [4-13] have emphasized the importance of using dermoscopy in differentiating rosacea from other skin conditions, such as SLE, and identifying key features that distinguish between different rosacea subtypes. The diagnostic utility of dermoscopy in rosacea has been particularly highlighted through studies [3,6-8] focusing on detecting Demodex mites, a common factor in rosacea pathogenesis. The proliferation of Demodex is often associated with the papulopustular subtype (PPR), and detecting these mites has been crucial in understanding the inflammatory response in rosacea patients. The ability of dermoscopy to reveal Demodex tails and follicular openings in real-time offers clinicians an alternative diagnostic pathway to traditional biopsy methods. As demonstrated by the studies included in this review, the detection rates of Demodex using dermoscopy are high, making it a valuable diagnostic tool in clinical practice and research.

Several studies have confirmed the distinct dermoscopic features of different rosacea subtypes [9-13], including erythematotelangiectatic (ETR), papulopustular (PPR), and phymatous (PHR) rosacea. It also analyses the dermoscopic features that differentiate this condition from similar clinical conditions. The “inverse strawberry” pattern of malar rash in SLE distinguishes it from the vascular polygon pattern commonly seen in ETR [9]. This is a critical finding to differentiate between both conditions, especially in early disease stages. The presence of yellow scales, follicular plugs, and pustules in PPR further highlights the inflammatory nature of this subtype, where Demodex plays a significant role. Phymatous rosacea presents unique dermoscopic patterns, such as orange diffuse structureless areas and linear vessels with branches [10]. The comparative analysis between different populations [13], such as the Chinese Han cohort and the European sample, reinforces the consistency of dermoscopic features across diverse ethnic groups, demonstrating variations in the intensity and distribution of vascular and follicular patterns. This finding suggests that while the core features of rosacea remain consistent, there may be regional or ethnic differences in presentation that warrant further investigation. Other distinct dermoscopic patterns, such as structureless focal orange areas and perifollicular orange discoloration, were demonstrated in Granulomatous rosacea, which is often difficult to diagnose due to its subtle presentation.

This review investigated the recent findings on the use of dermoscopy in diagnosing different types of rosacea. It emphasized the role of dermoscopy in enhancing diagnosis and treatment monitoring, as a demonstration of follicular and vascular changes can help guide management monitoring. By comparing dermoscopic features across studies and populations, this review highlighted the diagnostic potential of dermoscopy, particularly in distinguishing between rosacea and conditions like SLE and identifying Demodex infestation.

In conclusion, the current studies on dermoscopy and its role in diagnosing rosacea provide good evidence of the great role of this noninvasive tool in this condition. It enables identifying the key features associated with each type of rosacea. Dermoscopy improves differential diagnosis between rosacea and other similar clinical conditions, especially systemic lupus erythematosus. In addition, these current studies focus on refining the diagnostic criteria for subtypes of rosacea and monitoring treatment outcomes.

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دور الديرموسكوب في تشخيص الوردية: مراجعة للأدبيات

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الملخص

الخلفية: العد الوردي هو اضطراب جلدي التهابي مزمن يظهر على شكل احمرار مستمر في الوجه، مع ظهور حطاطات وبثور على خلفية من توسع الشعيرات الدموية. غالبًا ما يكون تشخيصه صعبًا نظرًا لتداخل أعراضه مع حالات جلدية أخرى مثل التهاب الجلد الدهني وحب الشباب. ومع ذلك، فإن التشخيص الدقيق ضروري للإدارة الفعالة للحالة.

الأهداف: يهدف هذا الاستعراض إلى تقييم دور الديرموسكوب كأداة تشخيصية غير جراحية في تحسين دقة تشخيص العد الوردي وأنواعه الفرعية.

المواد والطرق: يركز هذا الاستعراض على الخصائص الجريبية والوعائية المميزة التي يمكن اكتشافها باستخدام الديرموسكوب، ويحدد السمات الرئيسية للديرموسكوب في حالات العد الوردي مثل الأوعية متعددة الأضلاع، انسداد الجريبات، وعث الديموديكس. وتم تقييم هذه النتائج في سياق التفريق بين الأنواع الفرعية المختلفة للعد الوردي، بما في ذلك العد الوردي الحطاطي البثري، العد الوردي الحمامي الوعائي، العد الوردي الفيمي، والعد الوردي الحبيبي.

النتائج : كشفت الدراسة أن الديرموسكوب يعزز بشكل كبير دقة تشخيص العد الوردي من خلال الكشف عن أنماط وعائية وجريبية محددة يصعب اكتشافها من خلال الملاحظة السريرية فقط. علاوة على ذلك، يساهم الديرموسكوب في تصنيف العد الوردي إلى أنواعه الفرعية المحددة. هذه الدقة المحسّنة في التشخيص يمكن أن تؤدي إلى نتائج سريرية أفضل ومراقبة علاج أكثر فعالية للمرضى المصابين بالعد الوردي.

الكلمات الدالة: فحص الجلد، تشخيص الوردية.