Dermoscopic aspect of verrucous epidermal nevi: New findings

Abstract

Background and Aim: Verrucous epidermal nevi are cutaneous hamartomas having many clinical variants. Dermoscopic features of verrucous epidermal nevus have rarely been investigated. We aimed to identify dermoscopic findings of the entity which will facilitate the diagnostic process by reducing the use of invasive diagnostic methods.

Material and Methods: The study included the patients with histopathologically approved verrucous epidermal nevus. Clinical, dermoscopic and histopathological features of the patients were retrospectively reviewed and the findings identified were recorded. Dermoscopic examination was performed with a polarized-light handheld dermoscope with 10-fold magnification.

Results: The most common dermoscopic features were thick brown circles, thick brown branched lines and terminal hairs. The most common vessel pattern was dotted vessels. Branched thick brown lines, brown globules, brown dots forming lines, serpiginous brown dots, white and brown exophytic papillary structures, fine scale, thick adherent scale and cerebriform structures were the other findings.

Conclusion: We observed many vascular and non-vascular dermoscopic findings which have not been described previously for the entity. Dermoscopic examination of the verrucous epidermal nevi may lead more reliable clinical interpretation and thus it may reduce the need for histopathological investigation.

Keywords: dermoscopy, large brown circles, verrucous epidermal nevus
1. Introduction

Epidermal nevi (EN) can be defined as cutaneous hamartomas having many clinical variants. Verrucous and well-circumscribed papillomatous lesions are typical presentation of EN (Figure 1,2). The lesions can be seen anywhere and all component of the epidermis including keratinocytes, hair follicles, sebaceous glands, eccrine and apocrine glands may be involved (1). Verrucous epidermal nevus (VEN) is the most common variant of EN (2). Epidermal nevus may be associated with some systemic abnormalities and this condition is known as epidermal nevus syndrome (3,4).

Dermoscopy is a widely used non-invasive diagnostic tool in the diagnosis of many dermatological diseases. It is increasingly used for both melanocytic and non-melanocytic skin lesions in daily dermatology practice. When reviewing the literature, it seems that there is just one original study investigating dermoscopic features of EN which included only 8 patients with VEN (2).

Here we aimed to identify dermoscopic findings of VEN which will facilitate the diagnostic process by reducing the use of invasive diagnostic methods.

2. Material and methods

The study included the patients with histopathologically approved verrucous epidermal nevi between December 2017 and November 2018. Demographic, clinical, dermoscopic features and histopathological report of all the cases were retrospectively reviewed. Dermoscopic examination was performed with a polarized-light handheld dermoscope with 10-fold magnification (DermLite DL4; 3Gen, San Juan Capistrano, CA). Dermoscopic photographing was done with a dermoscope attached mobile phone with a high resolution camera (iPhone 7 plus, Apple, California, USA). Descriptive statistical analysis was performed using SPSS pocket program (SPSS Inc., Chicago, IL). All the
procedures followed the Helsinki Declaration and the study was approved by the local
clinical research ethic committee.

3. Results

A total of 20 patients was enrolled in the study. The mean age was 24 (range 11-42) and
the majority was male (55%). Face was the most common localization (n=9, 45 %). The
other localizations were trunk (n=7, 35%) and neck (n=4, 20%). Clinical examination
revealed solitary papules or plaques in 12 (60 %) patients (Figure 1) and well
circumscribed, grouped, exophytic structures (Figure 2) in 8 (40 %) patients.

The most common dermoscopic features were thick brown circles, thick brown branched
lines and terminal hairs. The most common vessel pattern was dotted vessels. All the non-
vascular and vascular dermoscopic features were detailed in Table 1 and Table 2,
respectively.

When it comes to the histopathological features, all of the lesions showed typical
histological features of verrucous epidermal nevus including hyperkeratosis, acanthosis,
papillomatosis, and elongation of rete ridges. No any histological signs of melanocytic
nevi or any malignant conditions were observed.

4. Discussion

Recently, dermoscopy has become an important diagnostic tool in various dermatologic
conditions. Dermoscopic features of many benign and malignant growths as well as many
kinds of epidermal nevi like nevus sebaceous (5,6) hair follicle nevi (7) and nevus
comedonicus (8) have been well described. However, dermoscopic aspect of VEN has
been the subject of only one original study in which Carbotti et al (2) analyzed 8 patients
with VEN. Here, we identified clinical and dermoscopic features of 20 cases of VEN.
Carbotti et al (2) reported that all the lesions of VEN showed large brown circles and absence of milia-like cysts, pigment network, and globules. They also noted that comedo-like openings were present in three out of eight lesions (2). In the present study, we observed that, 10 (50%) out of 20 lesions showed large brown circles (Figure 3,4). The histological counterpart of the brown circles is thought to be peculiar disposition of pigmented keratinocytes surrounding the dermal papillae (2). In the present study, comedo-like openings were present in 7 (35%) lesions. Comedo-like openings may correlate histologically to pseudohorn cysts in the epidermis opened to the surface of the lesion (9). Brown globules (Figure 3,5) were present in 2 (13.3) lesions and none of the lesions showed milia like cysts and pigment network, in our study. Brown globules histologically corresponds superficial dermal melanophages (10).

Here we identified ten more non-vascular dermoscopic findings which have not been described previously for VEN. These findings were branched thick brown lines (Figure 3), terminal hairs (Figure 3), brown globules (Figure 3,5), white and brown exophytic papillary structures (Figure 6), fine scale, thick adherent scale (Figure 7), broad based branched thick lines (Figure 7), brown dots forming lines (Figure 6), serpiginous brown dots (Figure 6) and cerebriform structures (Figure 8).

Exophytic papillary areas are usually found in papillomatous dermal nevus (11). Branched thick brown lines, comedo like openings and cerebriform structures are the typical dermoscopic features of seborrheic keratosis (12). While the histological counterpart of thick brown lines is thought to be advanced epidermal acanthosis (10), cerebriform structures may correlate histologically to papillomatous surface of the epidermis (9).

When it comes to the vascular dermoscopic features, the most common vessel pattern was dotted vessels. Coiled, looped, serpentine and polymorphous vessel patterns were also
present in some lesions (Figure 6). Dotted, coiled, looped and serpentine vessels can be seen in many benign and malignant conditions. Polymorphous vessel pattern means a combination of several vessel patterns and usually indicates a malignant tumor; however, it may also rarely be observed in benign conditions including eccrine poroma, pilomatrixoma, Clark’s nevus and clear cell acanthoma (13,14). In the present study, we observed polymorphous vessel pattern in 3 (20%) lesions (Figure 6).

The results of our study can be interpreted as follows;

1. All verrucous epidermal nevi may not show large brown circles dermoscopically. In the present study, half of the lesions didn't exhibit this finding.

2. We observed 10 more non-vascular dermoscopic features which were not described previously for VEN.

3. We also observed some vessel patterns which also were not described previously for VEN.

4. VEN may similar dermoscopic features with seborrheic keratosis and dermal nevus.

In conclusion, we suggest that dermoscopic examination may lead more reliable clinical interpretation and thus it may reduce the need for histopathological investigation in patients with possible VEN. However, the entity may share the same dermoscopic characteristics with seborrheic keratosis and dermal nevus. In this context, despite the biopsy remains as the gold standard for definite diagnosis, any surgical intervention may not be needed as almost all the differential diagnoses are benign conditions like seborrheic keratosis and dermal nevus. However, in case of the presence of polymorphous vascular pattern which may be a clue to malignant growths, it would be a reasonable to confirm the diagnosis histopathologically.
References


Table 1: Non-vascular dermoscopic findings of the patients with epidermal nevus

<table>
<thead>
<tr>
<th>Dermoscopic findings</th>
<th>Number and percent of the patient</th>
</tr>
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<tbody>
<tr>
<td>Large brown circles</td>
<td>10 (50 %)</td>
</tr>
<tr>
<td>Broad based, branched thick curved lines</td>
<td>1 (6.7 %)</td>
</tr>
<tr>
<td>Thick brown lines</td>
<td>9 (45%)</td>
</tr>
<tr>
<td>Brown globules with surrounding white halo</td>
<td>4 (20 %)</td>
</tr>
<tr>
<td>Whitish exophytic papillary structures</td>
<td>8 (40 %)</td>
</tr>
<tr>
<td>Brown exophytic papillary structures</td>
<td>8 (40 %)</td>
</tr>
<tr>
<td>Brown dots forming lines</td>
<td>1 (5 %)</td>
</tr>
<tr>
<td>Serpiginous brown dots</td>
<td>1 (5 %)</td>
</tr>
<tr>
<td>Cerebriform structures</td>
<td>1 (5 %)</td>
</tr>
<tr>
<td>Comedo like openings</td>
<td>7 (35 %)</td>
</tr>
<tr>
<td>Thick adherent scale</td>
<td>2 (10 %)</td>
</tr>
<tr>
<td>Fine scale</td>
<td>2 (10 %)</td>
</tr>
<tr>
<td>Terminal hairs</td>
<td>8 (40 %)</td>
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</table>
Table 2: Vascular dermoscopic findings of the patients with epidermal nevus

<table>
<thead>
<tr>
<th>Dermoscopic findings</th>
<th>Number and percent of the patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dotted vessels</td>
<td>7 (35%)</td>
</tr>
<tr>
<td>Coiled Vessels</td>
<td>3 (15%)</td>
</tr>
<tr>
<td>Loop vessels</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Serpentine vessels</td>
<td>4 (20%)</td>
</tr>
<tr>
<td>Polymorphous vessel pattern</td>
<td>3 (15%)</td>
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</tbody>
</table>
Figure legends

Figure 1. A verrucous epidermal nevus presenting as an elevated solitary plaque localized on the abdominal skin of a young female patient.

Figure 2. Another verrucous epidermal nevus characterized with well circumscribed, grouped, exophytic structures localized on the back of a young male patient.

Figure 3. Large brown circles (white circle), thick brown branched lines (black circle), terminal hair (blue circle), brown globules (red circle).

Figure 4. Brown exophytic structures (arrow), large brown circles (circle)

Figure 5. Brown globules (circle)

Figure 6. Brown dots forming lines and serpiginous brown dots (black circle), looped and serpentine vessels (yellow circle), serpentine and dotted vessels (red and blue circles), coiled vessels (white circle) white exophytic structures (arrow).

Figure 7. Thick adherent scale (arrow), broad based thick branched lines (circle)

Figure 8. Thick adherent scale (white arrow), cerebriform structures (black arrow)