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Original Article

Dermoscopic diagnosis of epidermal cyst

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Abstract

Aim: The clinical features of epidermal cyst (EC) are well known, however, dermoscopic aspect of the entity has rarely been a subject of investigation. Here we aimed to identify the dermoscopic findings of EC which may increase the accuracy of diagnosis before surgical interventions.

Material and Methods: The study included the patients diagnosed with EC those who applied to outpatient dermatology clinic of a tertiary center. Age and gender of the patients, disease durations, symptoms, site and size of the lesions, dermoscopic and histopathological findings were retrospectively reviewed.

Results: A total of 24 lesions from 24 patients were enrolled in the study. The most common dermoscopic finding was white structureless background (96%) followed by punctum/pore sign (75%), widely distributed/branched irregular linear vessels (71%), blue-white structureless color (46%), mobility sign (41%), peripheral thick branched vessel (33%) and polychromatic structures (4%).

Conclusion: We describe two novel dermoscopic features which were not described previously for EC: Mobility sign and polychromatic structures. Along with the previous studies, our study revealed that EC has a peculiar dermoscopic pattern. Dermoscopic examination may increase diagnostic accuracy before surgery making possible a management with minimal invasive procedures.

Keywords: Dermatoscopy; dermoscop; epidermal cyst.

INTRODUCTION

Epidermal cyst (EC), also known as epidermal inclusion cyst represents the most common cutaneous cysts. It can be seen anywhere but usually appears on face, neck and trunk. An epidermal cyst usually presents as an asymptomatic dome shaped lesion firm to fluctuant in consistency (1).

Dermoscopy, also known as skin surface microscopy is a non-invasive in vivo diagnostic tool using in diagnosis of both neoplastic and inflammatory cutaneous disorders. Recently, dermoscopy has become an essential part of dermatology practice (2). The clinical features of EC are well known, however, dermoscopic aspect of the entity has rarely been a subject of investigation (3).

Here we aimed to identify the dermoscopic findings of EC which may increase the accuracy of diagnosis before surgical interventions.

MATERIAL and METHODS

Subjects

This retrospective study included the patients diagnosed with EC those who applied to outpatient dermatology clinic of a tertiary center (Ahi Evran University, Department of Dermatology) between December 2017 and April 2019. The parameters reviewed were as follows: age and gender of the patients, disease durations, symptoms, site and size of the lesions, dermoscopic and histopathological findings.

Dermoscopic evaluation

Dermoscopic examination performed by a handheld dermoscope with x10 magnification (Dermlite 4, 3GEN Inc, San Juan Capistrano, CA, USA). Capture of dermoscopic images was performed using a high-resolution mobile camera phone attached to the dermoscope (iPhone 7 plus, Apple Inc, CA, USA). All the dermoscopic findings observed were reviewed.

Histopathological Diagnosis

The diagnosis of EC was made based on the clinical and pathological correlation. The lesions without histopathological diagnosis were excluded. Presence of a keratin contained cyst formation (ruptured or intact) occupying at least upper dermis covered by a flattened epithelium similar to surface epidermis was accepted as histopathological criteria. The lesions having an incidental epidermal cyst formation were not the subject of the study.

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Statistical analysis

Relationship between two categorical independent variables was evaluated using Chi square test. Descriptive statistics for numeric variables was represented as mean, and for categorical variables, as numbers and % values. SPSS Windows version 24.0 package software (SPSS Inc., Chicago, IL, U.S.A) was used for statistical analysis and $p<0.05$ was considered as statistically significant.

Ethic approval

All the procedures followed were in accordance with the Helsinki Declaration and the study was approved by the local clinical research ethic committee.

RESULTS

Patients

There was a total of 65 patients diagnosed as EC. Forty-one patients were excluded due to several factors including insufficient clinical data, absence or low quality of dermoscopic images and absence of histopathological diagnosis. The patients those who didn't fully meet the histological diagnostic criteria were also not included. Thus, a total of 24 lesions from 24 patients were enrolled in the study. The mean age of the patients was 39 (age range 22-59) and the majority were male (n=17, 71%). The mean duration of the lesions was 18 months (ranging from 3 to 63 months). The most common localization was neck (n=11, 46%) followed by trunk (n=7, 30%) and face (n=6, 25%). The mean long diameter of the lesions was 9.8 mm. The overwhelming majority of the lesion was asymptomatic (n=22, 92%). Only two patients reported a mild to moderate pain with palpation.

Dermoscopic Findings

The most common dermoscopic finding was white structureless background (23, 96%) observed almost in all the lesions. This finding was followed by punctum/pore sign (18, 75%), widely distributed/branched irregular linear vessels (17, 71%) and blue-white structureless color (11, 46%). We also described a novel dermoscopic diagnostic feature for EC which we called "mobility sign". Another new finding which we identified for EC was polychromatic structures (rainbow sign). There was no statistically significant difference between dermoscopic features and the patient's age, gender; durations and site of the lesions. All the dermoscopic features detected have been shown in Table 1.

Table 1. Dermoscopic findings of epidermal cysts

Dermoscopic Finding	Patients (n, %)
White structureless background	23, 96%
Punctum/Pore sign	18, 75%
Widely distributed/branched irregular linear vessels	17, 71%
Blue-white structureless	11, 46%
Mobility sign	10, 41%
Peripheral thick branched vessels	8, 33%
Polychromatic structures (Rainbow pattern)	1, 4%

DISCUSSION

EC is a common entity which can be described as a keratin filled and epithelium lined cutaneous cyst. It usually involves face, scalp, and trunk. The classical clinical presentation is a dermal or subcutaneous nodule (1). The exact etiopathogenesis is unknown but researches have suggested that human papilloma virus and exposure to ultraviolet light can play a role in the formation of some ECs (4).

Recently, dermoscopy has become an indispensable diagnostic tool in daily dermatology practice allowing a detailed examination of almost all kind of skin lesions. Dermoscopic features of many inflammatory and non-inflammatory cutaneous conditions have been well described, however, few studies regarding the dermoscopic aspect of EC exist in the literature. The only original investigation focused on the subject was performed by Suh et al from Korea (3). They reviewed dermoscopic findings of the histopathologically approved epidermal cysts of two groups of 38 patients, 20 with unruptured cysts and 18 with ruptured cysts. In our study the lesions were not be able to group as ruptured and unruptured (3). This limitation was mainly due to absence of detailed description in the histopathological reports.

In the study of Suh et al, the most common dermoscopic feature was white background detected in 76% of the lesions (3). We detected this color of background (Figure 1,2,3) in all the lesions included (23, 96%) except one which showed polychromatic structures (Figure 4). White structureless color is thought to correspond keratin mass histologically.

Blue-white structureless was another color change observed in the study of Suh et al. They observed that just in four lesions (3). Lacarrubba et al also identified irregular bluish pigmentation in their report of a case (5). In our study, bluish color (Figure 1,2,3) was present in 11 (46%) lesions. This change of color is thought to be dermoscopic counterpart of hypergranulosis (3). Krtanjek et al, reported a pediatric case of epidermal cyst showing dermoscopic brown-blue central pigmentation (6). This brownish pigmentation may correspond postinflammatory changes associated with traumatization and friction. We didn't observe a brownish pigmentation in any lesion. Absence of this kind of color change may reflect absence of traumatization and friction.

Another common finding in the study of Suh et al was punctum and pore sign. They detected this finding in 42% and 29% of the lesions respectively (3). Mun et al (7) and Ghigliotti et al (8) also pointed out the importance of pore sign in dermoscopic diagnosis of epidermal cyst in their reports. Punctum/pore sign represent a circular orifice filled with keratin on the surface of the lesion (3). The term "Pore sign" is usually preferred to highlight barely visible punctum. In our study punctum/pore sign (Figure 1,2,3) was found in 75 percent of the lesions.

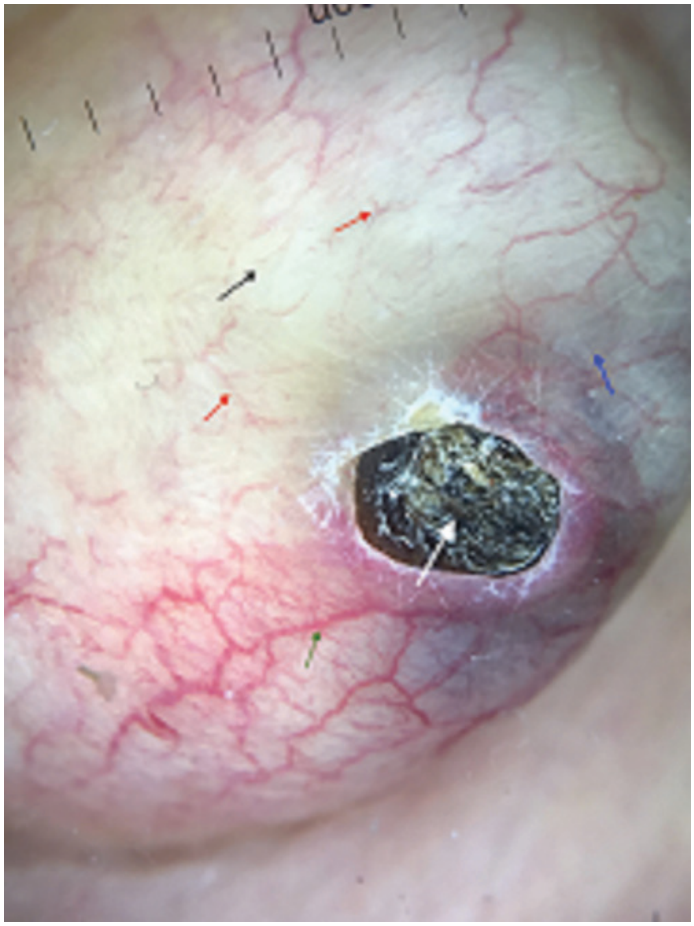

Figure 1. White structureless background (black arrow), blue-white weil (blue arrow), punctum/pore sign (white arrow), widespread branched irregular linear vessels (red arrows), peripheral thick branched vessels (green arrow)

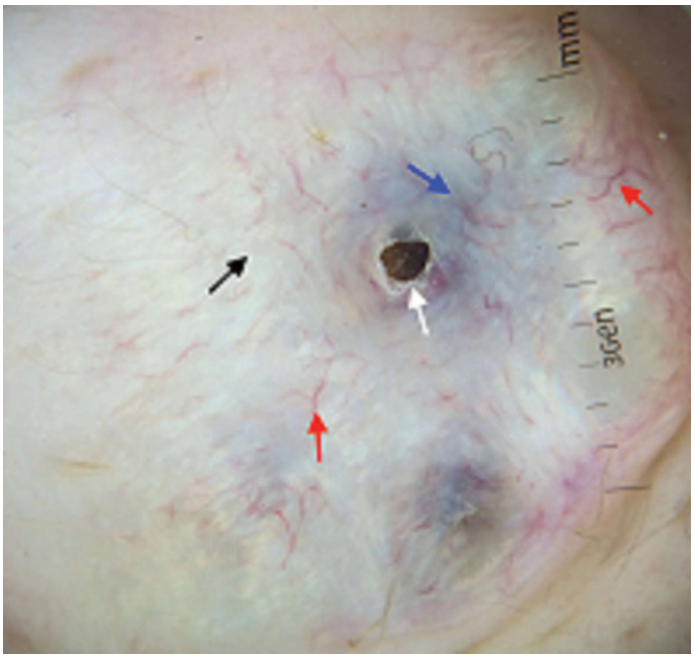

Figure 2. White structureless background (black arrow), blue-white weil (blue arrow), punctum/pore sign (white arrow), widespread branched irregular linear vessels (red arrows)

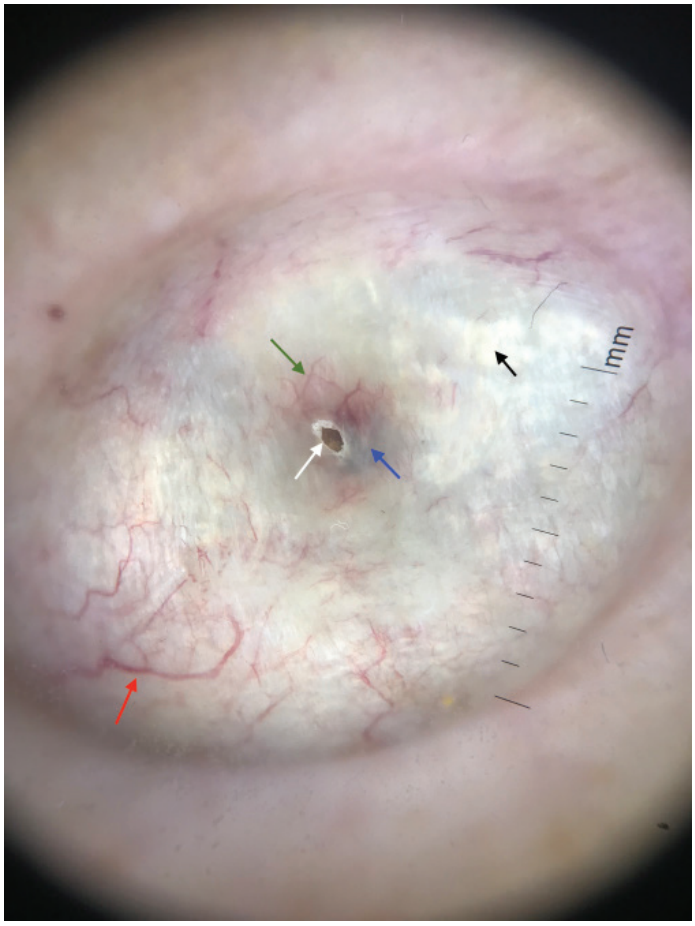

Figure 3. White structureless background (black arrow), blue-white weil (blue arrow), punctum/pore sign (white arrow), widespread branched irregular linear vessels (green arrow), peripheral thick branched vessels (red arrow)

When it comes to the dermoscopic vascular finding, Suh et al, described two pattern as peripheral linear branched vessels and arborising telangiectasia. They reported that these two patterns were observed in 42% and 11% of the lesions respectively (3). We observed two different vessel patterns similarly: widely distributed/branched irregular linear vessels (Figure 1,2,3) and peripheral thick branched vessels ("arborizing vessels") (Figure 1,3) which were observed in 71% and 33% of the lesions respectively. These vascular findings are considered to be associated with congestion of the blood as a result of the pressing caused by mass effect of the cyst.

In the present study, we described a novel dermoscopic finding. When plate of the dermoscope is shifted back and forth on the lesion with a slight pressure, nodular part of the lesion remains immobile while the overlying skin moves in same direction with the dermoscope plate. We called this sign as "mobility sign" (Figure 5) and observed in 41 percent of the lesions. We suggest that the sign corresponds a mobile cystic nodule relatively free from the overlying epidermis which is not expected in fixed and solid nodular lesion. Mobility sign may also be observed with naked eye, but we suggest that dermoscopy allows more clear and accurate observation.

Polychromatic structures also known as “rainbow pattern" in metaphorical language is described as the presence of several different colors juxtaposed next to each other (9). The histological counterpart of this finding is thought to be a vascular lumen-rich pattern of closely arranged ‘back-to-back’ vessels (10). Rainbow pattern first described as a specific phenomenon to Kaposi's sarcoma but it has subsequently been shown in many conditions like blue nevus, angiokeratoma, hypertrophic scars, stasis dermatitis and pyogenic granuloma (9,11,12). However, to our knowledge, there is no another study reporting this pattern previously for EC. In the present study we identified this finding in a face localized lesion (Figure 4).

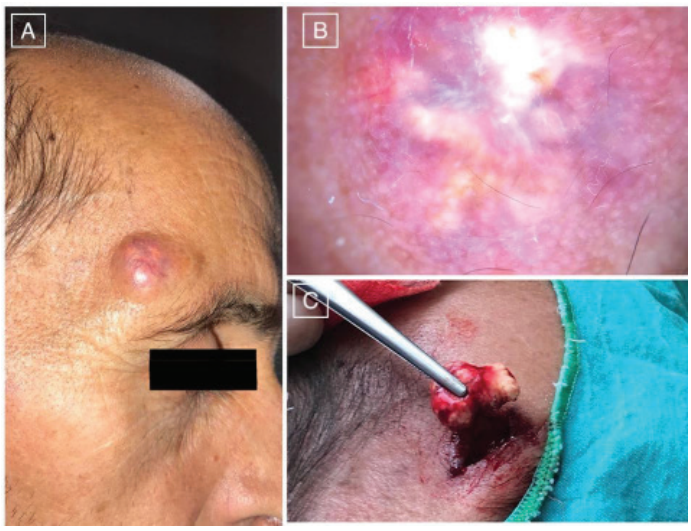

Figure 4. A) A dome shaped nodular lesion on the temporofrontal region. B) Dermoscopy of the lesion shows polychromatic structures also known as rainbow patter C) Intraoperative appearance of the lesion

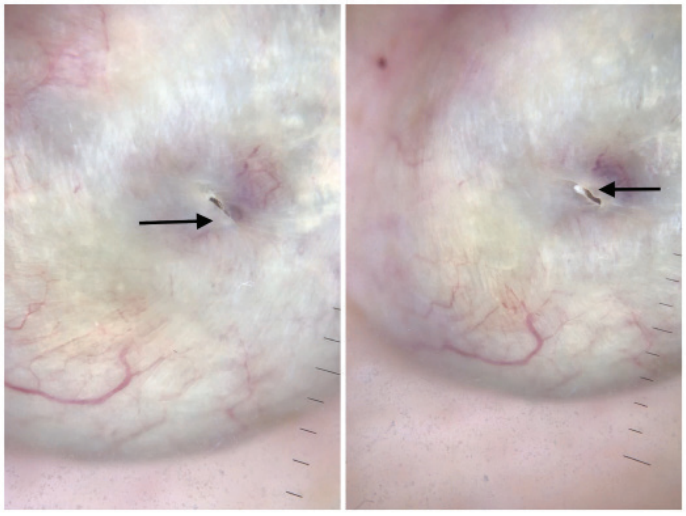

Figure 5. Videodermoscopic capture of the lesion showing “Mobility sign”. Please note that overlying skin moves in the same direction with the dermoscope plate. The black arrows show the direction of the plate

CONCLUSION

In conclusion, to the best of our knowledge, this is the second original investigation focused on the subject. Along with the previous studies, our study revealed that EC has a peculiar dermoscopic pattern. Dermoscopic examination may increase diagnostic accuracy before surgery making possible a management with minimal invasive procedures like cyst extraction after a small incision. Thus, it may allow more satisfied cosmetic and functional treatment outcome.

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Ethical approval: Ethical clearance was obtained and declared in the section of material and methods.

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