DERMA TODAY

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Dear Doctor,

Greetings from Micro Labs. We are happy to bring you "DERMA TODAY" which contains latest and interesting news in the field of Dermatology.

This issue contains:

1. Investigation of the value of trichoscopy in the follow-up of treatment response in patients with Androgenetic Alopecia
2. Serum inflammatory cytokine levels and their relationships to the severity of the condition in individuals with chronic spontaneous urticaria
3. Development of a Qualitative tool to use and interpret the Numerical Rating Scale for Pruritus Intensity in Atopic Dermatitis patients.
4. A Case Report on Perforating Fibrous Histiocytoma That Mimics Keratoacanthoma

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Looking forward to your valuable feedback.

Best Regards,

Medical Team, Micro Labs Limited

1. Investigation of the value of trichoscopy in the follow-up of treatment response in patients with Androgenetic Alopecia

Introduction

Androgenetic alopecia (AGA) is an androgen-related disease that affects genetically susceptible people. The main characteristic of AGA is the progressive reduction of the hair follicle, which is caused by a change in the dynamics of the hair cycle and results in the vellus transformation of the terminal hair follicle. As a result, the apparent hair density on the scalp gradually decreases.[1] It causes considerable psychosocial damage and requires comprehensive treatment. In addition to hair transplantation, non-surgical treatments for AGA include topical minoxidil, oral anti-androgens, 650-900 nm low-level laser therapy, and platelet-rich plasma. Their results, however, are not long-lasting since AGA is a chronic, progressive illness that need long-term, possibly even lifelong. As a result, frequent monitoring of the therapy response is necessary. To monitor treatment response in AGA patients, many approaches can be utilized, including scalp biopsy, global photography, trichogram, phototrichogram, and TrichoScan. But most of them are time-consuming, expensive, or difficult/impractical to employ. Therefore, there is a need for more cost-effective, simple, and dependable instruments to monitor AGA treatment. Trichoscopy, a non-invasive and simple procedure, has been used successfully to diagnose AGA. While trichoscopy has proven to be an effective diagnostic tool for androgenetic alopecia (AGA), its applicability in evaluating the effectiveness of treatment remains unclear.[2] The purpose of this study was to determine if trichoscopy is useful for monitoring therapy response in individuals with AGA.

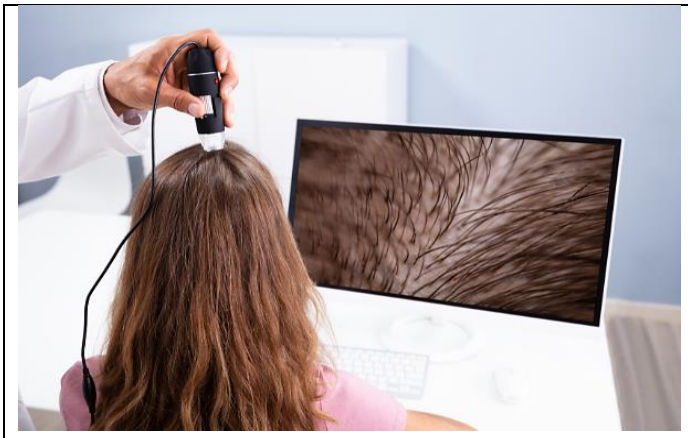

Figure 1. Trichoscopy

Methods

This prospective study included patients aged 16-65 who presented with hair loss and were diagnosed with AGA. Each patient's left temporal region and vertex intersection were used to identify the examination area. The region to be investigated was covered with a cardboard template that had a hole in the middle of 1 cm^2 in size. The hairs in that area were then chopped

to a length of 0.5–1 mm. Another template was cut into four equal portions both horizontally and longitudinally using two threads, and it was put on the examination region. It took 12 to 15 minutes to complete the process. At the three-month follow-up, the same process was repeated on the same inspection region. Two doctors, one less experienced (doctor A) and one more experienced (doctor B), examined photographs related to hair illnesses and trichoscopy. The ratio of terminal to vellus hair (T/V) and the counts of terminal, vellus, and total hair (THC, VHC, ToHC) were determined. The same region was also analyzed using TrichoScan to produce numerical data. The agreement of trichoscopy and TrichoScan data was evaluated.

Results

The study comprised 95 participants with AGA (76 men and 19 women). Out of 95 patients, 34 (35.8%) were lost to follow-up. The agreement between doctor A and TrichoScan was reasonable for THC and ToHC pre-treatment and good post-therapy, but low for VHC and T/V ratio both before and after treatment. Doctor B and TrichoScan have great agreement on THC, VHC, and ToHC levels, as well as the T/V ratio before and after therapy. After three months of therapy, doctor A, doctor B, and TrichoScan tests showed a considerable rise in THC and ToHC, but no significant change in VHC (Table 1).

Parameters	Pre-treatment	Post-treatment	P
Doctor A			
THC, mean±SD	96.38±22.506	103.34±24.993	0.001
VHC, mean±SD	36.81±14.162	37.11±12.232	0.856
ToHC, mean±SD	133.16±25.699	140.46±28.065	<0.001
T/V ratio, median (range)	2.81 (0.88-7.50)	2.97 (1.14-5.66)	
Doctor B			
THC, mean±SD	98.16±21.254	102.59±23.474	0.022
VHC, mean±SD	34.24±13.175	35.08±12.191	0.569
ToHC, mean±SD	132.40±24.880	137.67±28.065	0.025
T/V ratio, median (range)	3.1 (1.12-8.15)	3.03 (1.16-6.16)	
Trichoscan			
THC, mean±SD	98.61±21.304	103.11±23.593	0.027
VHC, mean±SD	33.99±13.342	34.69±11.984	0.635
ToHC, mean±SD	132.65±25.172	137.80±26.379	0.029
T/V ratio, median (range)	3.22 (1.11-8.67)	3.09 (1.20-6.39)	

SD = standard deviation; THC = terminal hair count; ToHC = total hair count; T/V ratio = terminal to vellus hair ratio; VHC = vellus hair count

Table 1: P values for the change in mean hair counts after treatment, as well as the hair counts and terminal to vellus hair ratio ascertained by doctors A, B, and TrichoScan analysis.

Discussion

An effective AGA therapy should increase terminal hairs, decrease vellus hairs, and increase hair density. AGA is characterized by diverse hair diameters, a higher proportion of thin and vellus hairs, many single-hair pilosebaceous units, yellow spots, and a peripilar sign.[2] A previous study concluded that the five most common trichoscopic findings in AA were yellow dots, black dots, damaged hairs, short vellus hairs, and tapering hairs. Yellow spots and short vellus hairs were thought to be the most sensitive indicators for AA, whereas black dots and tapering hairs were the most specific. Furthermore, trichoscopy was a good method for assessing response to AA therapy. [3]

Conclusion

Trichoscopy, when conducted by a clinician who was familiar with hair illnesses and trichoscopy, can be utilized as a sensitive approach for evaluating therapy response in AGA patients by determining THC, VHC, ToHC, and T/V ratio. If it was done by a less experienced practitioner, it could be used as a sensitive follow-up procedure with THC and ToHC.

Trichoscopy, when conducted by a doctor with experience in hair disorders and trichoscopy, can be utilized as a sensitive approach for evaluating therapy response in patients with AGA based on THC, VHC, ToHC, and T/V ratio.

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2. Serum inflammatory cytokine levels and their relationships to the severity of the condition in individuals with chronic spontaneous urticaria

Introduction

Chronic spontaneous urticaria (CSU) is a common allergic skin illness characterized by periodic pruritic skin eruptions lasting 6 weeks or more, with no identifiable external stimuli or triggers. CSU is characterized by persistent skin itching and erythematous rashes that can appear anywhere on the body and vary in size and shape. Deep tissue swelling and oedema can also be observed in CSU cases. Pain and burning sensations were frequent signs of CSU.[1] Angioedema affects 40-50% of patients with CSU. There was no curative therapy for CSU. Approved treatments manage symptoms but do not alter the disease's natural progression. The first line of therapy was a second-generation H1-antihistamine.[2] Serum inflammatory cytokines (SICs) regulate immune cell proliferation, development, and function, as well as modulate inflammation. Assessing SIC levels in CSU patients can help clinicians identify more effective treatment regimens.[1] This study aimed to investigate the association between serum inflammatory cytokines (SICs) and CSU severity to better understand the condition and develop effective treatment strategies.

Methods

The study included 114 patients with CSU admitted to the outpatient department as the research group (Res group), and 100 healthy persons who received examinations during the same period as the control group (Ctrl group). SICs, including as leukotriene B4 (LTB4), leukotriene C4 (LTC4), IL-4, IL-17, IL-31, and TNF-γ, were assessed and compared among patients in various groups. The study evaluated the relationships between each SIC and pruritus intensity, duration, urticaria activity, and quality of life (QOL) in different patient groups.

Results

Subjects in the Res and Ctrl groups were similar in age, gender, and BMI, with no significant differences found ($p > 0.05$). Patients in the Res group had significantly increased levels of

LTB4, LTC4, IL-4, IL-17, and IL-31, but lower levels of TNF-γ compared to the Ctrl group ($p < 0.05$) (Fig 1). There were significant variations ($p < 0.05$) in IL-4, IL-17, and IL-31 levels across patients with varying pruritus intensity. The patients were divided into three groups based on their urticaria activity: mild (n = 32), moderate (n = 55), and severe (n = 27). The Mann-Whitney U test (MWT) was used to compare the SICs of individuals with varying degrees of urticaria activity. Results showed significant variations in IL-17 and IL-31 levels between mild, moderate, and severe urticaria. IL-4 and IL-31 levels correlated positively with QOL ratings in patients, with significant differences ($p < 0.05$).

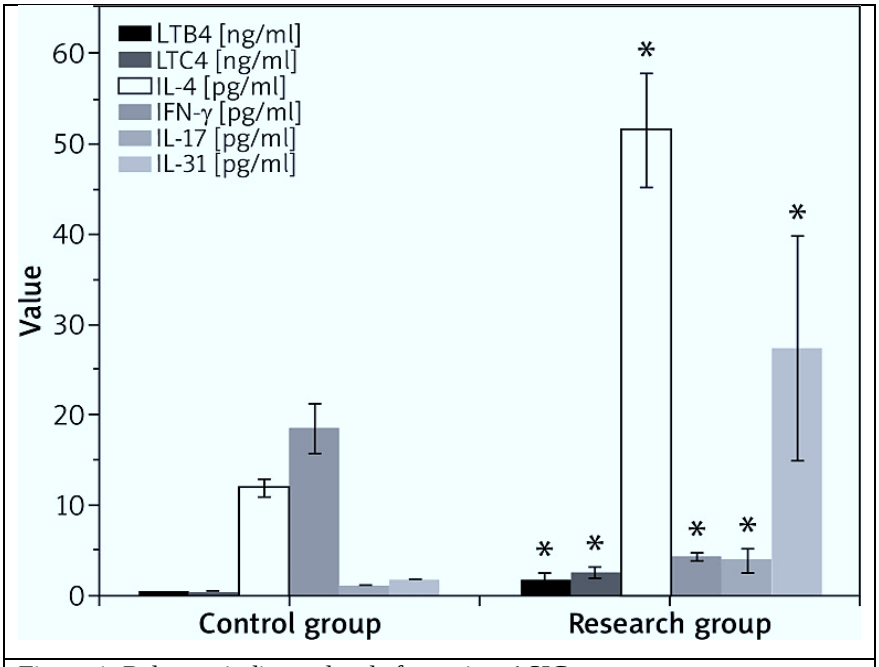

Figure 1: Relevant indicator levels for patients' SICs
(*Suggested a great difference with $p < 0.05$ for the comparison.)

Discussion

This study found a positive association between IL-17 and IL-31 levels and urticaria activity in patients. IL-4 and IL-31 levels were shown to be positively correlated with patients' CU-Q2oL scores. Serum IL-4 and IL-31 levels differed significantly between mild, moderate, and severe instances. SICs such as IL-17, IL-31, and IL-4 may contribute to urticaria by influencing inflammation, cell proliferation, and immunological reactivity.[1] Wang et al. concluded that increasing IL-4 levels enhance B cell proliferation and immunoglobulin E synthesis, resulting to greater sensitivity to allergens and worsening of the condition.[3] Furthermore, Toubi and Vadasz showed a positive correlation between the severity of illness and IL-17 levels.[4]

Conclusion

IL-4, IL-17, and IL-31 exhibited a significant link with the severity of CSU, which might be related to their role in immunological, inflammatory, and pruritic processes that exacerbate the condition.

The significant link between the severity of Chronic spontaneous urticaria (CSU) and IL-4, IL-17, and IL-31 may be attributed to their roles in immunological, inflammatory, and pruritic responses, which worsen the illness.

Reference

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3. Development of a Qualitative tool to use and interpret the Numerical Rating Scale for Pruritus Intensity in Atopic Dermatitis patients

Introduction

Atopic dermatitis (AD) is a chronic inflammatory illness that causes severe itching, pain, and dry skin.[1] In children, the estimated prevalence of AD was 15% to 20%, but in adults, it was 7% to 10%. It has been associated with skin discomfort, sleep disruption, atopic disorders (such as allergic rhinoconjunctivitis, food allergy, asthma, and eosinophilic esophagitis), and a low quality of life.[2] Approximately 86% of AD patients suffer itching on a regular basis, with 63% experiencing itching for at least 12 hours each day. Currently, pruritus severity was assessed by patient reports and intensity ratings, including the visual analogue scale, verbal rating scale, and numerical rating scale (NRS). The NRS has shown to be a useful tool for assessing the intensity of pruritus in AD patients, offering an accurate and precise way to assess pruritus. These tools offer patients' perspectives on the condition, which were useful yet subjective. Furthermore, healthcare professionals (HCPs) and patients may struggle to interpret these instruments in clinical settings.[1] The purpose of this study was to develop a qualitative instrument that would assist patients and medical professionals in determining and interpreting the level of pruritus using a numerical rating scale.

Methods

Nine AD patients were found and invited to take part in the online focus group. Adolescents (13-17 years old, n = 4) and adults (≥18 years old, n = 5) with diverse sociodemographic and clinical profiles were chosen. Patients with moderate-severe AD were prioritized to assure varying degrees of pruritus intensity. The focus group aimed to investigate how pruritus affects HRQoL in daily life for AD patients. The patient focus group had two distinct phases. The initial phase focused on presenting the HRQoL domains influenced by pruritus. In the second phase, patients scored the least severity of pruritus that had a moderate or severe influence on several HRQoL domains (on a scale of 0-10). The final focus group with the scientific committee (SC) attempted to establish key issues for the first draft of the guideline. An independent group of patients who did not participate in the initial focus group reviewed the first draft of the guideline. Semi-structured interviews (n = 6) were carried out to get feedback

from patients on the guideline's usability and usefulness. The final version of the guideline was created using the information obtained from this interview.

Results

This study found that pruritus had a significant influence on six health-related quality of life domains: sleep quality, emotional status, overall health-related quality of life, physical function, social/sexual activity, and productivity. Sleep quality and emotional status were notably affected. The tools found focused on HRQoL domains: sleep quality (75%), emotional well-being (67%), physical activity (50%), social and sexual activity (50%), and productivity (50%) (Fig 2). The SC concluded that pruritus has a significant impact on sleep quality and emotional well-being in AD patients and should be included in the guideline. Patients reported that pruritus had the greatest impact on their physical function. The SC agreed to develop a guideline for patients with AD, including information on the importance of pruritus assessment, barriers to evaluation, affected HRQoL domains, a pruritus rating scale, and assessment instructions. The final guideline was split into two sections: one for patients to quantify itch intensity objectively, and another for healthcare professionals to better understand pruritus severity in clinical practice.

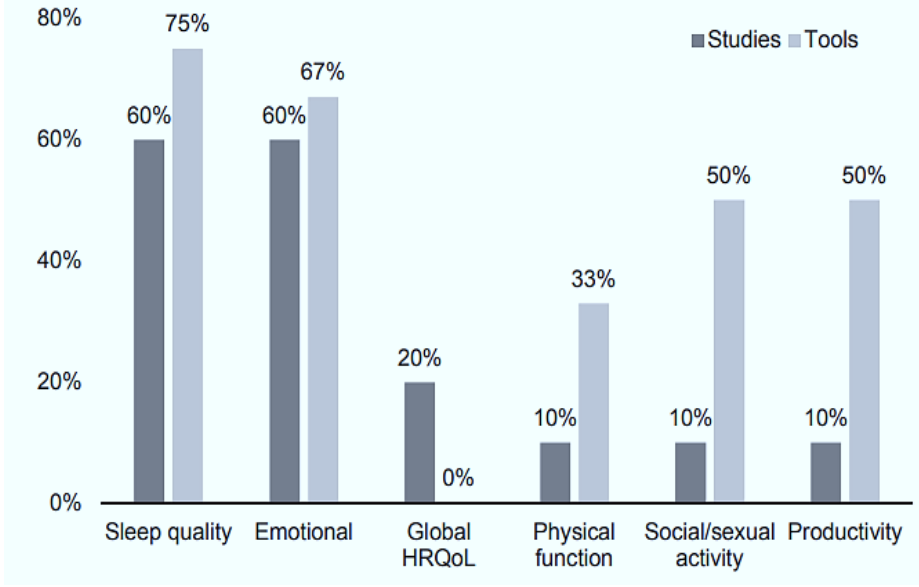

Figure 2. Health-related quality of life (HRQoL) domains affected by pruritus, as well as the tools found in the review. 10 studies and 12 tools were used.

Discussion

This study analyzed the influence of pruritus on patients' HRQoL and developed a guideline for doctors and patients to evaluate the intensity and impact on HRQoL. A patient's HRQoL was significantly impacted negatively by pruritus on a number of distinct parameters. The variables that were most affected and often included in HRQoL measures were sleep quality and the emotional domain. These were followed by other dimensions including productivity, physical function, and sexual activity.[1] Atopic dermatitis causes sleep problems in 47% to 80% of children and 33% to 90% of adults.[3] Furthermore, sleep disorders were very common in patients with AD and have a wide range of effects.[4]

Conclusion

The guideline for interpreting the pruritus rating scale can assist both adolescent and adult patients in objectively assessing pruritus severity and determining which HRQoL domains may be most affected by itching in patients with moderate-to-severe AD.

The guideline for interpreting the pruritus rating scale can assist both adolescent and adult patients in objectively evaluating pruritus severity and HCP when determining which HRQoL categories may be most impacted by pruritus in patients with moderate-to-severe atopic dermatitis (AD).

Reference

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4. Case report on Perforating Fibrous Histiocytoma That Mimics Keratoacanthoma

Introduction

Fibrous histiocytomas (FHs) or dermatofibromas are frequent cutaneous soft tissue lesions made up of fibroblastic and histiocytic cells. FHs often originate in the dermis and spread to the subcutaneous adipose tissue, but can also be deep-seated. FHs are often observed in adults between the second and fourth decade of life, with a female predominance. FHs are often single, red-brown, dome-shaped lesions measuring less than 2 cm on the lower extremities, but can also affect the upper extremity, trunk, or head and neck.[1] The most prevalent histopathological types include common FH (80%), aneurysmal (5.7%), hemosiderotic (5.7%), epithelioid (2.6%), cellular (2.1%), lipidized (2.1%), atrophic (1.0%), and clear cell (0.5%). Although the exact cause of FH was unknown, a number of researches suggests a possible neoplastic origin. FH instances may involve gene fusions involving PRKCA, PRKCB, and PRKCD, as well as the ALK gene.[2] This case study detailed a male patient of age 31, who had no prior medical history and who had an ulcerated nodule on his lower back that had been there for three months and had no history of trauma or pruritus.

Case Presentation

In this case study, a 31-year-old man with no prior medical history who had an ulcerated nodule on his lower back for three months was described. He had no history of trauma or pruritus. Clinical examination revealed a hard, well-defined, erythematous, crateriform, and focally ulcerated nodule measuring around 1 cm (Figure 1). The differential diagnosis consisted of keratoacanthoma, basal cell cancer, and amelanotic malignant melanoma. Histological

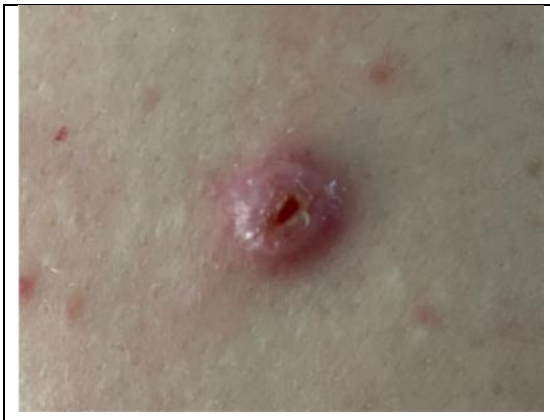

Figure 1. An erythematous, crateriform nodule with a central ulceration that was well-demarcated

investigation of the surgical excisional tissue showed well-defined fusocellular growth in both the superficial and deep dermis. The lesion consisted of bland spindle cells organized in a random or focally storiform manner (Figure 2 a). The spindle cells had an oval nucleus with vesicular chromatin and a lot of eosinophilic cytoplasm, but no appreciable cytonuclear atypia. Collagen fibers that were thicker, spherical, and trapped were seen in the periphery. The epidermis above had pseudoepitheliomatous hyperplasia, and the lesion's core featured an ulceration covered in a crust, with some collagen, elastic fibers, and spindle cell fascicles "perforating" the crust perpendicularly (Figure 2 b and c). Additionally, a few uncommon cells seemed to pierce the epidermis. The tumor cells showed patchy expression of CD68, negative expression of CD34, and partial positivity for Factor XIII (Figure 2 d). The histologic characteristics matched a perforating FH. CD34 negative eliminated the possibility of dermatofibrosarcoma protuberans, which was defined by CD34-positive fibrohistiocytic growth. The Mib-1 (Ki-67) proliferation index within the lesion was less than 1%.

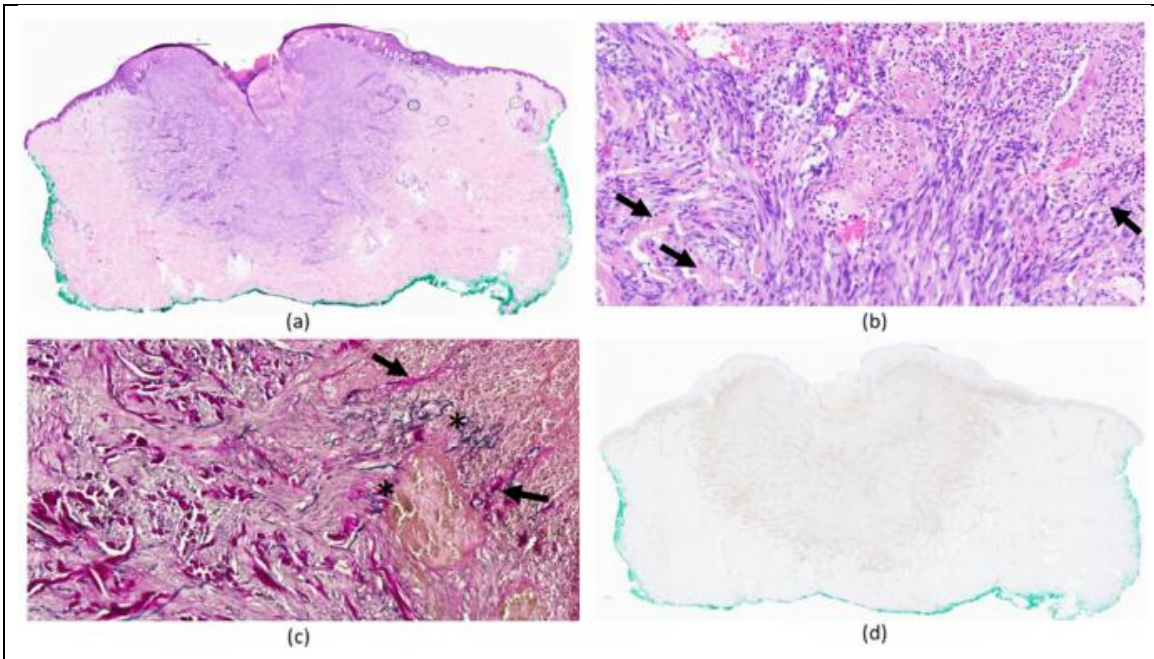

Figure 2. The histopathology of perforating fibrous histiocytoma. It showed a relatively well-demarcated cellular infiltrate of spindle cells in the superficial and deep dermis ((a) hematoxylin-eosin stain, ×10) with an overlying superficial ulceration, spindle cells surrounding the collagen bundle that "perforates" the crust ((b) hematoxylin-eosin stain, ×30), together with collagen (pointed out by arrows) and elastic fibers (pointed out by asterisks) ((c), Miller's stain, ×30). Partial positive for Factor XIII (d, immunostain, ×10).

Discussion

A rare case of a perforating FH was described in this case. There have only been two such examples described in the literature. Histological investigation of the surgical excisional tissue showed well-defined fusocellular proliferation in both the superficial and deep dermis. The tumor cells were partially positive for Factor XIII (Figure 2d), low in CD68, and negative for CD34 and keratins.[2] In a previous case report on benign fibrous histiocytoma of the medial rectus muscle, histopathology revealed a mass of bland and foamy spindle cells in a storiform pattern, positive for CD68, PGM1, and factor XIIIA but negative for S-100.[3]

Conclusion

Perforating FH was a rare histologic variant of FH that manifested as a crateriform nodule similar to keratoacanthoma. This study needed to promote awareness of this condition among pathologists, dermatopathologists, and dermatologists. More research was needed to identify if this entity has unique biological or molecular properties, as it may be under-reported.

Perforating FH was a rare histologic variant of FH that appeared as a crateriform nodule similar to keratoacanthoma.

Reference

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