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Epidermal Invagination with Distinctive Cornoid Lamella: A Case Study of Porokeratosis in A Middle-Aged Male

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Abstract

Porokeratosis is a rare keratinization disorder with specific pathologic findings involving abnormally processed epidermal keratin and presenting with the cornoid lamella. The current case report involves a 38-year-old male patient, who was communicating with a cutaneous lesion on the back of his left side, which best illustrates this condition. A 0.8x0.5x0.4 cm full-thickness skin biopsy was subjected to histopathological examination that showed an intradermal epidermal invagination with hyperkeratosis and parakeratosis. The characteristic diagnostic feature, the cornoid lamella, was described; the granular layer near the parakeratotic column was reduced. Further observations were that basal melanocytes were increased in areas immediately adjacent to the arterialized vessels and perivascular accumulation of chronic inflammatory cells in the dermis, while granulomas or malignancy were absent. The case also demonstrated the role of histopathological examination in increasing diagnostic rates and the need for the integration of various management approaches. With the risks of malignant transformation reported, primarily to squamous cell carcinoma, the concept incorporates compliance with follow-up examinations, photoprotective interventions, patient counseling, and/or adapted therapy perspectives. The case also shows multi-factorial etiology of porokeratosis through the presence of both genetic mutations of MVK and MVD and environmental factors, and immunological state. This case study adds a rare evidence along with its specific histopathological characteristics that help to define porokeratosis and direct relevant therapeutic management.

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Introduction

Porokeratosis is a group of rare diseases of keratinization and has one-of-a kind histopathology. The condition mostly clinically presents as annular plaques with a raised keratotic rim and sunk-in center, which poses a diagnostic dilemma in clinical dermatology.[1] The definitive feature is cornoid lamella – a parakeratotic column of enlarged keratinocytes inclining at an angle towards the stratum corneum.[2] This skin condition has been traced back in history to 1893, when Vittorio Mibelli first wrote about the disorder, making it easy to diagnose and understand this dermatologic condition.[3] Since then, scientific development facilitated by better diagnostic tools has made it possible to recognize several clinicopathological subtypes with differing phenotypes and outcomes.[4] P Keratinocytic variants of P are DSAP, porokeratosis of Mibelli, linear porokeratosis, punctate porokeratosis, and porokeratosis palmaris et plantaris disseminata. These variants are different, and the diagnostic and therapeutic management in these cases is entirely individual.[5] To date, there is still no clear consensus about the exact mechanism of development of porokeratosis among dermatological practitioners. Current evidence

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suggests a multifactorial etiology involving several key elements: genetic factors; there are known mutations for a number of genes, including MVK and MVD; immunosuppression; history of exposure to UV radiation; and injury to the affected tissue.[6] These factors provide a milieu in which the pathogenic process becomes multifactorial, which may explain the variation in clinical manifestations.[7] Perhaps the most important component in an otherwise cosmetic disorder is the propensity for malignant change, which raises porokeratosis from a cosmetic issue to one of potential malignancy. A transformation rate as low as 7.5% and as high as 11% is recorded by various authors, and the majority of malignant changes are squamous cell carcinoma.[8,9] Therefore, risk stratification for malignant transformation comprises lesion size of more than 2 cm, disease duration of more than 10 years, and the anatomical area exposed to sunlight. Histopathological exam is most crucial to diagnosing accuracy, and specificity may be demonstrated by the cornoid lamella.[10] This unique histological configuration is a parakeratotic column of cells within a keratin-filled epidermal sulcus, associated with the typical absence or diminution of the granular layer below. This results in a definitive diagnosis and defines the correct management approach in patients within the cohort with these features.[11] Since treatment is highly dependent on the clinical variant severity, the scope of the disease, symptoms, and individual factors, its approach is equally personalized.[12] The types of treatment may be topical or localized and systemic and may also involve surgery. Long-term surveillance is useful as malignant transformation has been reported to occur in some patients, at least as far as check-ups are concerned.[13] This case report describes the condition of a middle-aged male patient with porokeratosis as a case example regularly exhibiting the histopathological pattern that can be utilized for diagnosis and therapeutic management.

Case Description

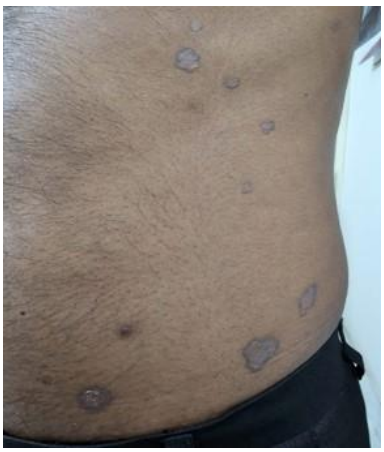

Fig. 1: Porokeratosis on the abdomen (left side of his back)

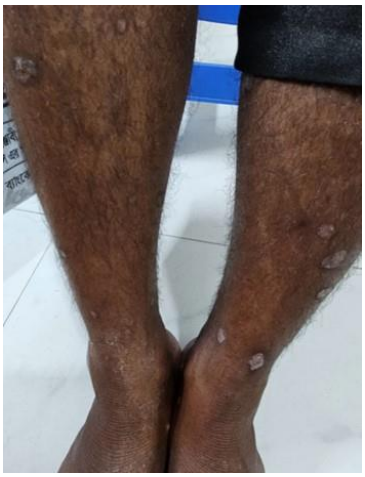

Fig. 2: Porokeratosis on Lower Legs

A 38-year-old male patient presented with a skin lesion on the left side of his back. This clinical presentation led to a full-thickness skin biopsy for histopathological analysis. Its dimensions were 0.8cm × 0.5cm × 0.4cm and was examined under

the microscope. In the histopathological examination, the changes found were consistent with porokeratosis. They saw intact hyperparakeratosis of the epidermis, showing a characteristic keratin-filled invagination. One diagnostic feature noted was cornoid lamella with reduced thickness of granular layer at the location of the parakeratotic column. Other observations were raised basal melanin and dermal perivascular accumulations of chronic inflammatory cells. Of special interest, granulomas and any sign of malignancy were not observed in the examined tissue. The histopathological features, especially the cornoid lamella, were in concordance with porokeratosis; therefore, clinical correlation for further management of the affected patients was recommended.

Discussion

In this case, therefore, it depicts the classical histopathological appearance of porokeratosis, with cornoid lamella being the characteristic abnormity. This is supplemented by the observed epidermal invagination with hyperkeratosis and parakeratosis, a granular layer that is notably reduced in thickness immediately below the parakeratotic column.[13] The outcomes are also consistent with the existing diagnostic criteria and present knowledge about the pathological processes in the disease. Basal melanocytes observed to have increased in number in adjacent regions deserve due consideration in the following discussion.[10] This GH observation still could be due to a myriad of issues related to a cellular response to inflammatory signals in these patch areas and also UV exposure that is well known in porokeratosis.[8] Incorporation of perivascular inflammatory cells within dermal tissue contributes to knowledge of porokeratosis as an inflammation-related skin disorder as stated in contemporary literature with reference to immunological features of the illness.[5] That the biopsy does not show features of granulomas or malignancy must be viewed with reference to the known natural history of the condition. The reported risk of malignant change, especially squamous cell carcinoma, makes it important to adopt an overall management plan.[14] The management plan for this case consequently needs to consist of systematic follow-up visits with attention to photographic documentation of the characteristics of the lesions and rigorous photoprotection, including broad-spectrum sunscreens and protective clothing, as well as teaching lessons regarding self-examination and appropriate warning signals of malignant change.[15] Further, an individualized management plan that should consider the size and the lesion location, risk factors that are specific to the patient, available therapeutic options that range from topical to surgical treatments, and the patient's preferences or compliance issues should also be made.[12] It also has the advantage of being both a clinical approach to the presenting complaint as well as a holistic assessment of the risks in the longer term.

Conclusion

This case report describes a typical clinical presentation of porokeratosis in middle-aged male patient, and morphology which should help to definitive diagnosis. The cornoid lamella along with the epidermal and dermal changes gives clinically valuable information about the nature and development of the disease. However, biopsy report is benign, and the case demonstrates the significance of meticulous

evaluation of tissue samples through histopathology, as well as clinico-pathological correlation and follow up because of the high risk of malignant change.

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