Scrotal Verruciform Xanthoma: An Unusual Condyloma-Like Lesion of the Genitalia

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ABSTRACT

Verruciform xanthoma (VX) is a rare, benign lesion with histological characteristics of papillary proliferation and foam cell accumulation. Although it predominantly affects the oral mucosa, its occurrence in the genital region is unusual. This report discusses a case of scrotal VX in a 90-year-old male, emphasizing its clinical and histopathological characteristics.

Key words: Verruciform xanthoma, verruciform genital-associated xanthoma, scrotum

Introduction

Verruciform xanthoma is an uncommon dermatological condition that primarily affects the oral cavity, with genital presentations being rare[1-3]. While the exact etiology is unclear, it is thought to be linked to chronic irritation or minor trauma[4]. Given its infrequency in the genital area, VX can be mistaken for viral warts or other neoplastic conditions. A term known as verruciform genital-associated xanthoma (VEGAS) has been proposed for VX affecting the genital region. We present a case of VEGAS to highlight its distinguishing clinical and histopathological features.

Figure 1 A non-ulcerated, pedunculated, erythematous, verrucous mass on the left scrotum

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Case Report

A 90-year-old man presented with a solitary, asymptomatic, pedunculated, erythematous lesion on the scrotum that had persisted for one year. The lesion had gradually increased in size but remained painless and non-ulcerated. The patient had no history of immunosuppressive conditions, sexually transmitted infections, or chronic dermatologic diseases. His underlying conditions included hypertension, dyslipidemia, senile dementia, and a history of hemorrhagic stroke in the hypothalamic region. The patient was completely dependent due to left hemiparesis and was bedridden. Dermatological examination revealed a 3.5 cm X 2.0 cm verrucous, flesh-colored to erythematous, non-tender pedunculate mass on the left side of scrotal skin (Figure 1). Provisional differential diagnoses included giant condyloma acuminatum, and seborrheic keratosis, and squamous cell carcinoma. An excisional biopsy was performed, revealing epidermal acanthosis, papillomatosis, and parakeratosis. The papillary dermis contained numerous foam cells without significant inflammatory infiltrates (Figure 2). Immunohistochemical analysis was not performed due to the characteristic histologic finding of foamy histiocyte accumulation in the papillary dermis, along with overlying epithelial hyperplasia without dysplasia. No recurrence of the lesion was detected after total excision.

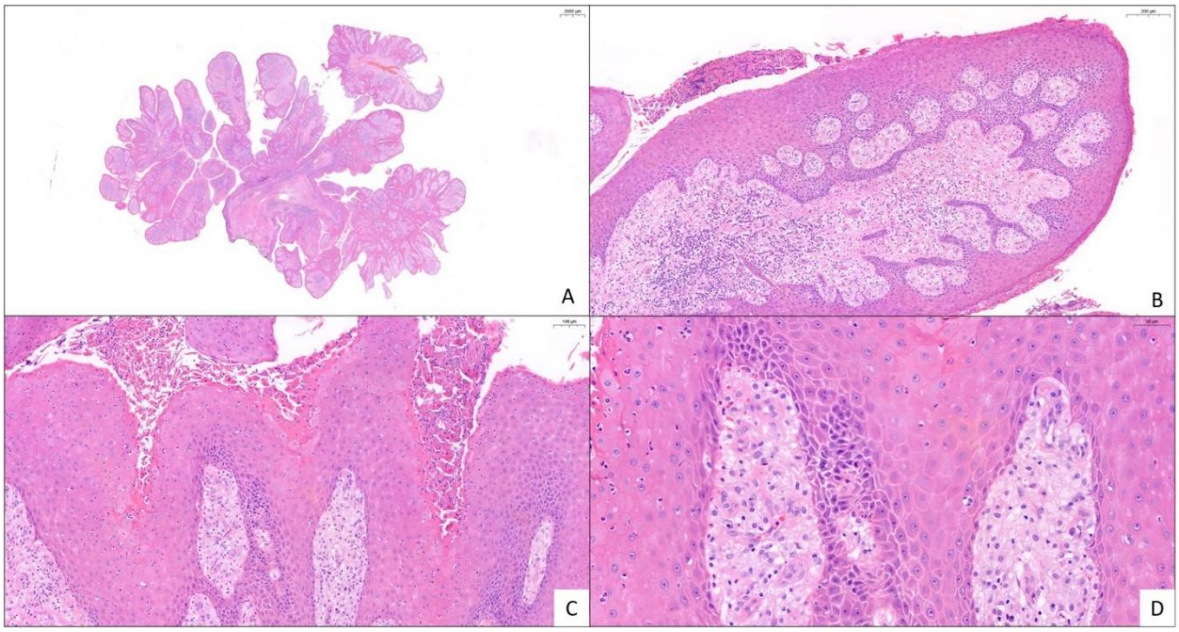

Figure 2 A pedunculated verruciform xanthoma presents with a characteristic verruciform and polypoid architecture, with a pedunculated base. At low magnification, the epidermis shows acanthosis, hyperkeratosis, and focal parakeratosis (A; H&E, X40). The rete ridges are elongated and downward projecting, overlying the corresponding papillary dermis, which contains a loosely organized fibrovascular core with perivascular lymphocytic infiltrate (B; H&E, X100). At higher magnification, clusters of foamy histiocytes are confined to the papillary and superficial reticular dermis, without extension into deeper layers. The epidermis shows mild spongiosis and exhibits characteristic wedge-shaped parakeratosis but lacks epidermal dysplasia (C and D; H&E, X200 and X400, respectively).

Table 1 Differential diagnosis of condyloma-like conditions of anogenital area

Condition	Clinical Features	Histopathological Features
Condyloma Acuminatum	Soft, filiform warts in genital area	Papillomatosis, koilocytes, coarse clumping keratohyalin granules, and HPV serotype positivity [3]
Seborrheic Keratosis	Waxy, stuck-on appearance	Acanthosis and papillomatosis, pseudohorn cysts, with squamous of Eddie in irritated lesions
Squamous Cell Carcinoma	Ulcerated, non-healing nodule with possibly distant metastasis	Atypical keratinocytes with nuclear pleomorphism, and increased mitotic figures[7]
Verruciform Xanthoma	Yellowish or erythematous, verrucous plaque or pedunculated mass	Foam cells in papillary dermis, with CD68 positivity among these foamy histiocytes[5]

Discussion

Scrotal VX is an extremely rare condition, with only a few reported cases in medical literature[6,7]. A term known as verruciform genital-associated xanthoma (VEGAS) has been proposed for VX affecting the genital region[6]. It is hypothesized to result from localized epithelial damage, leading to lipid accumulation within macrophages, characteristic of VX. Chronic irritation, mechanical trauma, or subtle inflammatory processes may contribute to its formation[8]. Although the precise etiology remains unknown, VX is not typically associated with systemic lipid metabolism disorders. Some studies suggest a link between VX and conditions such as lichen planus, chronic graft-versus-host disease, pemphigus vulgaris, and epidermolysis bullosa, indicating a potential role of chronic epithelial damage and immune dysregulation[9].

VEGAS exhibits identical histopathological features to VX but occurs predominantly in the scrotum, penis, vulva, and perianal areas. Recognizing VEGAS as a separate entity is essential for accurate diagnosis and to prevent misclassification with viral or neoplastic conditions. Differentiation of VX from other condyloma-like lesions is important, as VX can mimic various verrucous lesions of the anogenital region. Therefore, histopathological analysis is crucial for a definitive diagnosis. Unlike genital wart or condyloma acuminatum, which is associated with human papillomavirus (HPV) and display koilocytosis, VX has no viral etiology[3]. Similarly, squamous cell carcinoma can present as a verrucous lesion but is distinguished by cytological atypia, mitotic activity, and invasive growth of which features absent in VX. PAS staining and diastase resistance, combined with CD68 immunohistochemical staining, are useful in confirming xanthoma because they can identify the presence of non-glycogen carbohydrates in macrophages and histiocytes, aiding differentiation from other squamous proliferations[5].

Surgical excision remains the definitive treatment for VX, ensuring complete removal[3]. To date, no cases of recurrence or malignant transformation have been reported. Proper recognition of VX is essential to avoid misdiagnosis and unnecessary treatment.

In summary, scrotal VX is a rare but benign condition that can mimic infectious or neoplastic lesions. A high index of suspicion, coupled with histopathological examination, is essential for accurate diagnosis.

Immunohistochemical staining plays a critical role in differentiation from HPV-related and malignant lesions. Surgical excision remains the treatment of choice, with an excellent prognosis.

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