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CASE REPORT

A Case of Verruciform Xanthoma of Labia in a Child

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Purpose: Verruciform xanthoma (VX) is a rare, chronic, and benign lesion affecting the skin and mucous membranes. We reported a case of VX in the vulva of a female child.

Patients and Methods: A 12-year-old female had vulvar lesions for over 10 years without any discomfort. Physical examination revealed red lobulated patches on the left labia majora with a few scales attached to the surface. Histopathological examination indicated excessive and incomplete keratinization, hypertrophic spinous layer hyperplasia, neutrophil infiltration in the epidermis, and foam-like tissue could be seen in the dermal papilla. Lymphocyte-dominated inflammatory cell infiltration was scattered around the blood vessels. Immunohistochemical results showed positive CD68.

Results: The final diagnosis confirmed the presence of VX.

Conclusion: Surgical intervention proved successful in achieving favorable outcomes for the patient.

Plain Language Summary: Verruciform xanthoma (VX) is a rare and non-cancerous skin condition that usually appears in the mouth but can occur on the genitals. In this case, a 12-year-old girl had red, warty lesions on her left labia majora for over 10 years. The cause of VX is not well understood but may be linked to inflammation, trauma, or immune disorders rather than lipid metabolism. The girl's condition was confirmed through a biopsy, and she underwent surgical removal with no recurrence after a year. VX in the genital area is known as Vegas xanthomas. Though VX can look like other skin issues, a detailed examination of tissue samples is crucial for an accurate diagnosis. Treatment options include surgery, laser therapy, or topical creams. While VX is generally benign, seeking medical attention is important to rule out other concerns.

Keywords: verruciform xanthoma, labia, child, diagnose, treatment

Introduction

Verruciform xanthoma (VX) is a rare, chronic, benign skin and mucosal lesion. This disease represents 0.025–0.05% of all the cases that have been pathologically examined.[1] VX primarily manifests in the oral mucosa,[2] its occurrence on the labia in pediatric patients is exceptionally rare, with limited documented case reports,[3–5] including 2 cases involving the labia majora[3,5] and 1 involving the labia minora.[4] The lesions were verrucous plaques, and the clinical manifestations were similar to this disease's.

Case Presentation

A 12-year-old female presented with vulvar lesions persisting for over a decade. A decade ago, a rice-sized red vegetation appeared on her left labia majora without identifiable triggers. Over time, the skin lesions gradually increased, presenting no accompanying symptoms. The patient has not been treated since onset. In her medical history, there were no similar occurrences among family members, and she denied any history of sexual assault. Upon physical examination, the patient

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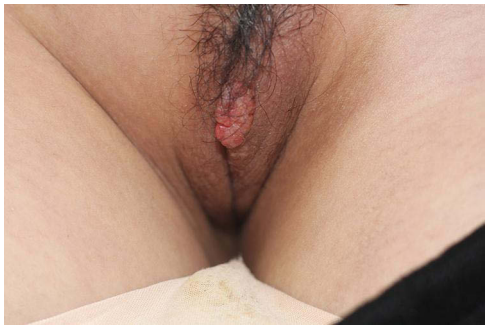

Figure 1 Skin lesion of left labia major.

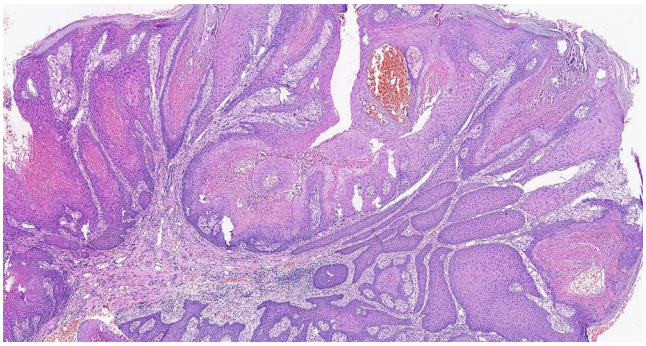

Figure 2 Pathology of Skin Lesions (HE×4).

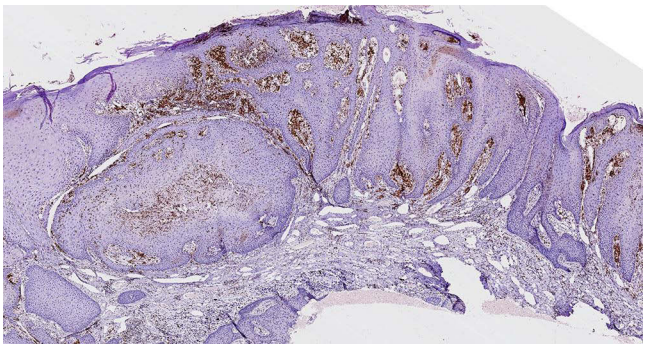

Figure 3 Immunohistochemical staining of skin lesions (CD68×4).

exhibited overall good health with no systemic abnormalities. Dermatologically, a red lobulated plaque of approximately 6×4 cm was identifiable on the left labia majora, accompanied by minimal scaling attached to the surface (Figure 1). Laboratory tests, including blood routine, liver function, kidney function, and blood lipids, revealed no abnormalities; HPV-DNA was negative for high-risk (27 species) and low-risk type (10 species). Histopathological examination showed hyperkeratosis with dyskeratosis, papillomatous epidermal hyperplasia, neutrophil infiltration in the epidermis, and numerous foamy histiocytes on the head of the dermal papilla. Inflammatory cells dominated by lymphocytes were scattered around the superficial dermal blood vessels (Figure 2). Immunohistochemistry showed positive CD68 in dermal papillary foam cells (Figure 3). Diagnosis: Verruciform xanthoma. Treatment: surgical resection, no recurrence for more than a year of follow-up.

Discussion

Non-oral verrucous xanthomas are usually located in the genital area and are called Vegas xanthomas.[6] The etiology and pathogenesis of VX remain elusive, with potential links to conditions including inflammation, local irritation, repetitive

trauma, immune disorders, HPV infection, and genetic factors, and are mostly thought to be unrelated to lipid metabolism.[7] A total of 194 cases of verrucous genital-associated (Vegas) xanthelasma have been reported in the literature.[8] One child with vulvar VX with congenital hemidysplasia with ichthyosiformery theroderma and limb defects (CHILD) syndrome has been reported.[3] Local irritation has been suggested to lead to epithelial degradation, triggering an inflammatory response that damages keratinocytes, which release lipids that are then engulfed by macrophages, resulting in foam-like histiocyte accumulation.[9] Damaged keratinocytes have been shown to attract neutrophils and stimulate epidermal growth, supporting the hypothesis of an inflammatory response.[10] Some experts believe that the disease is similar to lichen planus and is also formed by autoimmune reaction-induced apoptosis of epithelial cells.[11] Acral verrucous xanthelasma, predominantly affecting the lower extremities, may correlate with CHILD syndrome and lymphedema,[12–22] and has also been found to be closely related to concomitant leaky capillary syndrome,[17] with mutations in the NSDHL gene encoding 3β-hydroxysteroid dehydrogenase leading to CHILD.[23] 3β-hydroxysteroid dehydrogenase is known to be involved in cholesterol biosynthesis. When the enzyme is dysfunctional, it can cause excess and accumulation of fat droplets in tissues, and macrophages that have phagocytosed lipid components are transformed into foam-like histiocytes. The relationship between lymphedema and verrucous xanthelasma is not well understood, and Hunter et al speculate that in the setting of lymphedema, lymphatic dysplasia or insufficiency can allow lipoproteins to escape from the lymph. Subsequent phagocytosis of lipoproteins may lead to the formation of VX.[24] Wu and Wagner also reported a 12-year-old boy who had VX against the background of capillary leak syndrome, a state of hemodynamic disorder caused by vasoactive substances that leads to increased vascular permeability. Xanthelasma presents with skin color, verrucous, and hemorrhagic papules on his two big toes and right second toe. The researchers propose that the pathogenesis of VX in leaky capillary syndrome is similar to the development of VX in lymphedema.[17] In this case, unilateral ichthyosis-like erythroderma and ipsilateral malformations were not found on examination, so the diagnosis of CHILD could be excluded clinically. Lymphedema and capillary leak syndrome were also absent. Based on the infiltration of inflammatory cells in the epidermis and dermis on pathological examination, it is speculated that the local inflammatory response may be one of the causes of this disease. Despite clinical similarities with HPV-induced genital warts, negative HPV-DNA test results and the absence of vacuolar cells in pathological examination discount HPV are causal factors. Although the clinical manifestations of the disease are similar to genital warts, genital warts planus, verrucous carcinoma, and squamous cell carcinoma, histopathology can reveal specific manifestations of foam-like histiocyte infiltration in the papillary dermis layer, and the expression of foam-like histiocytes is positive for immunohistochemistry CD68.[25] Therefore, the pathological examination is of great significance for the diagnosis of this disease.

Treatment modalities include topical drugs, cryotherapy, electrocautery, laser therapy, and surgical excision, with an overall favorable prognosis. Verrucous xanthelasma can be cured by complete excision.[26–28] However, there has been a recurrence of the lesion when the lesion is not completely resected.[28] Recurrence has also been reported after treatment with CO_2 laser, and it has also been reported that the disease has been successfully treated with scraping and reducing volume combined with CO_2 fractional laser.[29] Additionally, 5% imiquimod cream has also been shown to have some effect on the disease.[4]

Conclusion

Verrucous xanthelasma is a benign, asymptomatic verrucous lesion that is most commonly found in the mouth. Although they are similar to skin lesions caused by tumors or viral infections, they can be distinguished based on histologic evaluation. Definite pathologic features include hyperkeratosis with parakeratosis, acanthogenesis, reticular ridge lengthening, dermal neutrophil inflammation, and dermal papillary foam cells. Patients may seek treatment because they are concerned about sexually transmitted diseases, or lesions may be discovered incidentally during a general skin examination. VX that occurs in the genital area and oral VX have similar features. Treatment with surgical excision, fractional CO_2 laser, or imiquimod 5% cream may be considered. Verrucous xanthelasma should be considered when diagnosing growths that occur in the genital area.

Abbreviations

VX, Verruciform xanthoma; CHILD, congenital hemidysplasia with ichthyosiform erythroderma and limb defects.

Ethics Statement

The publication of these pictures is subject to the consent of patients and their guardians and the signing of informed consent and approved by the Ethics Committee of Jiangxi Provincial Dermatology Hospital.

Consent Statement

The patient provided informed consent for the publication of the case.

Acknowledgments

These authors contributed equally to this work. Mei He and Mingqiang Liu are the first co-authors of this study.

Author Contributions

Meihua He and Mingqiang Liu are the first co-authors of this paper. All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors report no conflicts of interest in this work.

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