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CASE REPORT

Epidermodysplasia Verruciformis: a case report

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ABSTRACT

Background: Epidermodysplasia verruciformis is a rare, inheritable disease characterized by an unusual susceptibility to infection with specific types of human papillomavirus and a greater propensity for developing malignant skin tumors.

Case presentation: A 55-year old male was presented with complaint of painless, hard growth extending from his toe nail for the last one year. He was diagnosed as a case of Epidermodysplasia Verruciformis followed by Mohs surgical procedure.

Conclusion: Epidermodysplasia Verruciformis is an autosomal recessive genetic disorder and it predisposes patients to widespread papilloma viral infection. This might be considered as a model of cutaneous human papilloma virus oncogenesis. Generally, Epidermodysplasia Verruciformis reveals an autosomal receding pattern of inheritance. Prolonged exposure to sunlight, living in high altitudes and outdoor occupations are the known risk factors to malignant deterioration of EV lesions.

Keywords: Case report, squamous cell carcinoma, oncogenesis, Epidermodysplaia Verruciformis, malignant growth.

Background

Epidermodysplasia verruciformis is a rare, inheritable disease characterized by an unusual susceptibility to infection with specific types of human papillomavirus and a propensity for developing malignant skin tumors. Lewandowski and Lutz first described the disease [1]. Nearly half of all patients having EV would develop cutaneous malignancies, leading to Bowen's type carcinoma (invasive) and squamous cell carcinoma in situ which appear mostly after sun-exposure in the fourth or fifth decade of life.

Features of clinical diagnosis are life-long outburst of flat and macules like pityriasis versicolor, papules that are wart-like and are associated with a greater risk of non-melanotic skin cancer. The earlier lesion frequently occurs in infancy. Some other nonmalignant types are seborrheic plaques like keratosis and macules [2]. Such lesions typically present as malignant transformation with 35-50% of patients in their forties or fifties. These patients may have Bowen's-type carcinoma in situ and invasive squamous cell carcinoma. Metastasis is rarely seen in such cases. Such presentation may also be seen in other immune-compromised patients [3].

Case presentation

A 55 years old Saudi male presented at the dermatology clinic with a complaint of a painful growth extending from his toe nail. He had this growth for the last one year and its size was progressively increasing (Fig 1).

The general and systemic examination was unremarkable. There was no history of taking medicines/drugs, smoking or significant allergy to food or medicine. There was also no history of identical conditions in the family.

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Routine investigations like complete blood count, urine routine examination, renal function tests and liver function tests were all within normal limits. Histopathology of skin biopsy proved the diagnosis.

The patient was referred for Moh's surgery since no lymph node involvement or distant lesion was seen. Though more drastic compared to pharmacological treatment, surgical treatment is substantially quite effective. The preferred approaches include defect reconstruction with full-thickness or split-thickness grafts, complete excision or local flaps and referral for treatment of squamous cell carcinoma which arises from the lesions. In this case, neither chemotherapy nor radiotherapy was required as no lymph node nor metastasis was discovered. This case was referred for Moh's surgery. Chemotherapy with or without radiotherapy, as in this case, can be beneficial in achieving tumor's regression/lymph nodes before surgery. Strict sun protection and lifetime observation for initial diagnosis of premalignant/malignant lesions show that they may be initially treated with surgical excision/ablated locally or grafting is vital for better prognosis/survival of EV patients.

Mohs micrographic surgery can preserve the healthy tissues, which are important for these patients afflicted by multiple skin cancers and having a risk of their recurrence. It is not clear about the role of medicine (Etretinate) in the EV because the viral infection signs do persist pathologically in spite of witnessing adequate clinical improvements in the patients who are treated with the Etretinate at 1 mg per kg weight of body per day. As also, Acitretin of dosage of 0.5 mg to 1 mg per day is effective and is presently the drug of choice [4]. Rarely, metastasis to the regional lymph nodes may be seen; yet it occurs and necessitates multidisciplinary management to achieve improved prognosis. Whether there is an acceleration of the malignant transformation with radiotherapy, as is suggested, can be only known after a long-term follow-up of such patients.

Another alternative option is the non-surgical treatment. Different types of non-surgical treatment methods have been tried for treatment of EV, such as oral as well as topical retinoid, immunotherapy, interferon, cryotherapy and electro-desiccation. But not all these types of treatments are found to be effective and had only temporary results. The lesions usually necessitate surgical excision followed by reconstruction of defects. This appears as the most effective treatment and this is found to be an only known way to increase survival period. It is seen that pharmacological treatment can improve the quality of life for the affected persons [5]. Yet another recommended agent is Inferon. However, for gaining clinical benefit from this, the patient should possess a robust immune system. One more therapeutic agent called, Imiquimoid, induces production of the cytokines from macrophages and monocytes and hence stimulates the T cell Helper 1 response with possibly, β cell response and the cytotoxic T cell activation. About this agent, two published cases can be found in the literature. In one study, imiquimod was found to be ineffective in maternal half-brothers who were HIV positive having EV [6]. But in another study, imiquimod was found to be effective for treatment of EV [7]. Because of the conflicting outcomes of these studies, imiquimod requires further investigations before it can be used for this indication. Cimetidine, another agent, depresses the mitogen-induced lymphocyte proliferation along with the suppressor T cell activities. It was found by Oliveira et al. that it was ineffective in EV treatment [8]. But for the current case, the surgical treatment followed by the chemotherapy session is highly recommended.

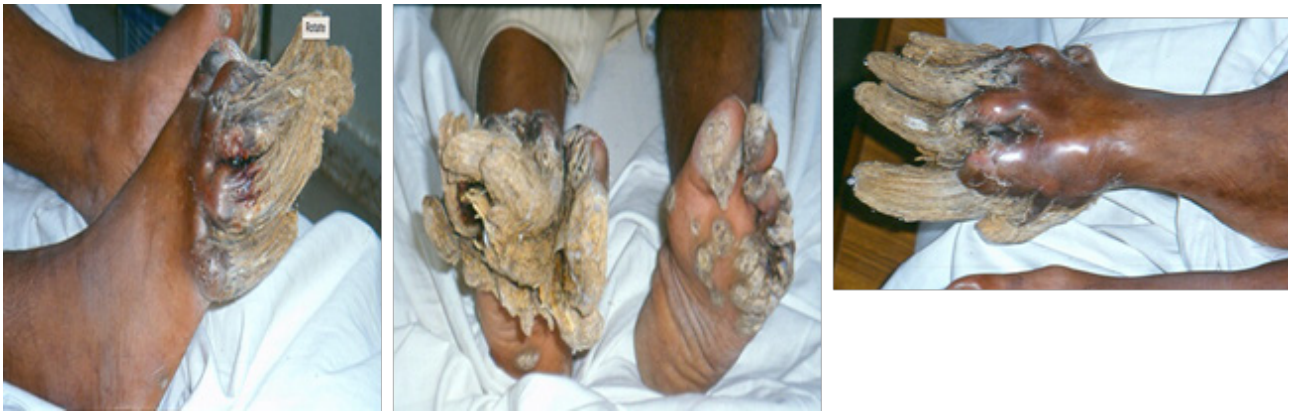

Figure 1: *Multiple long woods like material and verrucous lesions, with inflammation and hemorrhagic crusts.*

Discussion

Usually, EV is suspected in case of appearance of general wart-like lesions quite early stages of life and examining lesions histologically, patient's immunological status and detecting HPV DNA found in the lesions. It is suspected that genetic factors cause EV; long sunlight exposure causes malignant deterioration of the lesion. Resulting infection exhibits with the presence of pityriasis versicolor-like planar, benign, wart-like macules early in infancy. Factually, malignant change in EV needed nearly twenty to thirty years. Conversely, today, malignancy conversion is observed in short periods of time, perhaps because of the prolonged time to sun-exposure, outdoor or altitude occupations [2]. Thus, malignancies begin to appear before an age of forty years. Lesions are seen appearing mostly on areas of high sun-exposure, usually on the forehead. This might be explained as a combination of possibly the existence of oncogenic EV-HPV in the hair follicles and ultraviolet exposure. X-rays and ultraviolet are carcinogens. In such cases, metastasis is quite rare if the history of undergoing radiation therapy is not there. In case a patient having EV works outdoors and/or lives at locations of high altitude or is not using sunscreen, the malignant transformation may be observed in the disease progression earlier.

Conclusion

Epidermodysplasia Verruciformis is an autosomal recessive genetic disorder and it predisposes patients to widespread papilloma viral infection. This might be considered as a model of cutaneous human papilloma virus oncogenesis. Generally, Epidermodysplasia Verruciformis reveals an autosomal receding pattern of inheritance. Prolonged exposure to sunlight, living in high altitudes and outdoor occupations are the known risk factors to malignant deterioration of EV lesions.

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None

List of Abbreviations

EV	Epidermodysplasia Verruciformis
HPV	Human papillomavirus

Conflict of Interests
None

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None

Consent for publication
Informed consent was obtained from the patient to publish this case report.

Ethical approval
Ethical approval is not required at our institution for publishing a case report in a medical journal.

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Authors' contribution
Samia Sulaiman Alnugali is the sole author of this case report. She managed the patient, wrote the manuscript and approved the final version of the manuscript.

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Summary of the case

Patient (gender, age)	1	Male, 55 year old
Final Diagnosis	2	Epidermodysplasia verruciformis
Symptoms	3	Growth extending from the toe nail
Medications (Generic)	4	Etretinate, Acitertin
Clinical Procedure	5	Mohs Surgical procedure: defect reconstruction with full-thickness or split-thickness grafts, complete excision or local flaps.
Specialty	6	Oncology
Objective	7	To treat the rare disease
Background	8	Epidermodysplasia verruciformis is a rare, heritable disease characterized by an unusual susceptibility to infection with specific types of human papillomavirus and a propensity for developing malignant skin tumors.
Case Report	9	A case of malignant painless hard growth from toe nail of a male patient in fifties, diagnosed with epidermodysplasia verruciformis
Conclusions	10	EV is essentially a genetic cancer and is of viral origin, and might also be considered as a model of cutaneous HPV oncogenesis. Lengthy exposure to sunlight not using sunscreens, living in high altitudes and outdoor occupations all risk factors to malignant deterioration of EV lesions.
MeSH Keywords	11	Case report, squamous cell carcinoma, oncogenesis, Epidermodysplasia verruciformis, malignant growth