

ERYTHROPLASIA OF QUEYRAT (BOWEN DISEASE OF THE GLANS PENIS) AND ROLE OF DERMOSCOPY IN DIAGNOSIS

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ABSTRACT

Erythroplasia of Queyrat (EOQ) is a squamous cell carcinoma in situ most commonly located on the glans penis or prepuce. EOQ accounts for roughly 10 % of all penile malignancies and may lead to invasive squamous cell carcinoma. Using of dermoscopy as adiagnostic tool can help in differentiating between noninfectious balanitis (Zoon's plasma cell balanitis, psoriatic balanitis, seborrheic dermatitis and non-specific balanitis) and erythroplasia of Queyrat. Standard therapy includes local excision, partial or total penectomy, cryotherapy, and topical cytotoxic agents. Treatment of EOQ has proven to be challenging due to low response rates and recurrence. In addition, radical procedures can significantly affect sexual function and quality of life. Alternative laser treatments and photodynamic therapy (PDT) offer promising results for treating EOQ.^[1,18,20]

BACKGROUND

EQ is a rare disorder. The exact prevalence is not well documented in the medical literature. Erythroplasia of Queyrat (EQ) originally was described by Tarnovsky in 1891 and subsequently was appreciated as a penile disease by Fournier and Darier in 1893. More intensive studies by Queyrat in 1911 allowed this condition to be accepted as a distinct entity. He described erythroplasia of the glans penis and concluded that the disease represented a precancerous process. Over the last few years, dermoscopy has been shown to be a useful tool in assisting the noninvasive diagnosis of various general dermatological disorder.^[13,14]

Pathophysiology

EQ arises from the squamous epithelial cells of the glans penis or inner lining of the prepuce. It is seen almost exclusively in uncircumcised men and represents an in situ form of squamous cell carcinoma. Progression to invasive carcinoma may occur after a variable period of time.^[19]

PRESENTATION

History

Median age of onset is 51 years. EQ occurs only in men. Characteristic lesions of EQ are solitary or multiple erythematous plaques. The condition almost always

involves the glans penis or adjacent mucosal surfaces or both. Presenting symptoms can vary and may include the following.^[1]

- Redness
- Crusting
- Scaling
- Ulceration
- Bleeding
- Pain
- Itching
- Dysuria
- Penile discharge
- Difficulty retracting the foreskin.

Physical

Solitary or multiple cutaneous lesions may be present. Typically minimally raised, sharply define borders, erythematous plaques with variable texture are seen. The plaques may be smooth, velvety, scaly, crusty, or verrucous. Ulceration or distinct papillomatous papules within a plaque may indicate progression to invasive squamous cell carcinoma. Erythroplasia of Queyrat (SCC in situ on the glans) usually presents on the glans penis or the inner side of the foreskin [Figure 1]. The progression of erythroplasia into SCC has been reported to occur in 10–33% of cases.^[6,11,13]



Figure 1: Erythroplasia of Queyrat – reddish plaque on the glans with some periurethral nodules (Courtesy of Hon Pak, MD).

Causes

EQ most often occurs in uncircumcised men. Multiple factors have been implicated as causative agents in this process.

- Chronic irritation, inflammation, and infection appear to be the common links. A recent case report described a patient with coexistent Zoon balanitis.
- Urine, smegma, or poor hygiene can cause chronic irritation of the area.
- Other physical factors, such as heat, friction, and trauma, also have been implicated.
- Chronic infections, such as herpes simplex and human papillomavirus are other considerations.
- Immunosuppression from allogeneic organ transplantation may contribute to increased overall incidence and invasive disease in affected patients.
- Consider a broad differential diagnosis with cutaneous penile lesions. All types of inflammatory, infectious, and neoplastic processes can occur in this area. A systematic approach is crucial.^[2,3,9,10,11]

Seborrheic dermatitis and non-specific balanitis usually show only linear irregular unspecific blurry vessels.^[14,15]

whereas cottage cheese-like structures (sparse white coating corresponding to Candida yeast colonies growth) showed a strong correlation with candida balanitis.^[14]

Erythroplasia of Queyrat has been reported to show scattered glomerular vessels (both clustered and diffusely distributed).^[18,19]

DIFFERENTIALS

Balanitis Xerotica Obliterans, Balanoposthitis, Allergic and Irritant contact dermatitis, Drug-Induced, Bullous Disorders, Psoriasis plaque, Squamous Cell Carcinoma, Truma, Systemic disorders and balanitis (specific types).^[2,8,9,10]

WORKUP

Dermoscopy

The dermoscopic hallmark of Zoon's plasma cell balanitis is the presence of focal/diffuse orange-yellowish structureless areas and/or fairly focussed curved vessels (including serpentine, convoluted and chalice-shaped); other possible findings include linear irregular blurry vessels and dotted vessels.^[7,12,14,15,16]

From a dermoscopic point of view, psoriatic balanitis is characterised by the presence of regularly distributed dotted/glomerular vessels.^[6]

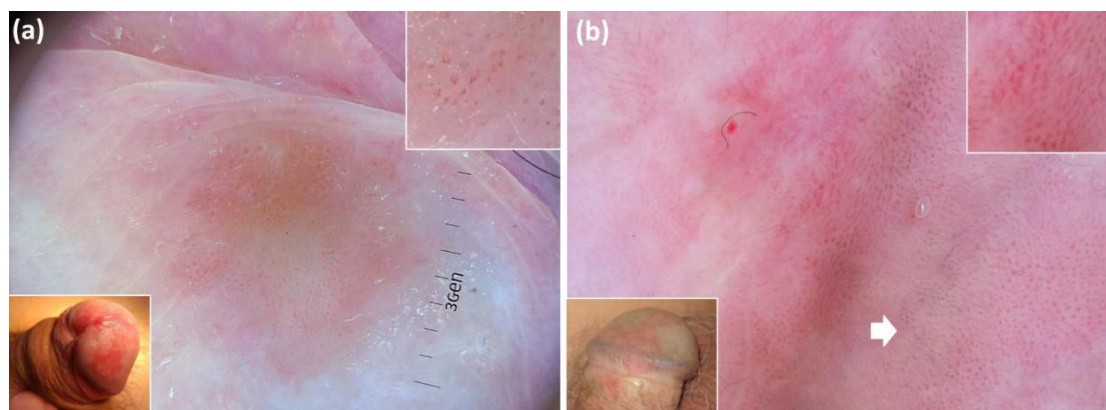


Figure 1. Dermoscopy of erythroplasia of Queyrat displays glomerular vessels, which may have a clustered (a) or diffuse (b) distribution. Magnification of the vessels in the upper right boxes reveals that they are heterogenous in shape, size and distance among each other (a,b). Linearly arranged brownish dots (white arrow) are also visible in the case in figure (b).^[12,18]

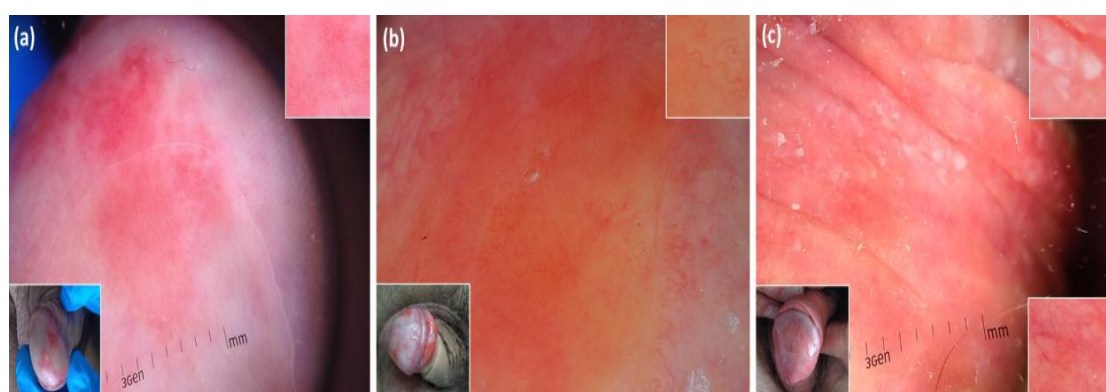


Figure 2. Dermoscopy of psoriatic balanitis reveals diffuse dotted vessels (better visible in the upper right box) (a), whereas Zoon plasma cell balanitis is mainly characterised by orange structureless areas (diffuse in this case) along with focused linear curved vessels (serpentine vessels in this case – better visible in the upper right box) (b) and candidal balanitis by cottage cheese-like structures (sparse white coating corresponding to *Candida* yeast colonies growth) (better visible in the upper right box) and blurry linear vessels (better visible in the lower right box) (c).^[12,16,17]

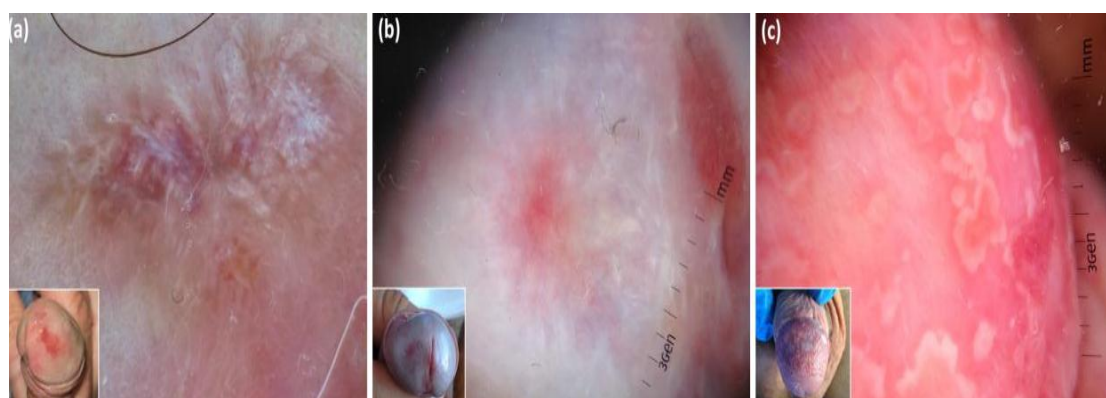


Figure 3. Dermoscopic examination of a case of erythematous lichen planus of the glans displays the typical Wickham striae; brownish structureless areas are also seen (a). Dermoscopy of lichen sclerosus and circinate balanitis respectively reveals reddish areas along with focal bright white areas (b) and yellowish pustules arranged in an annular/polycyclic fashion (c).^[9,14,20]

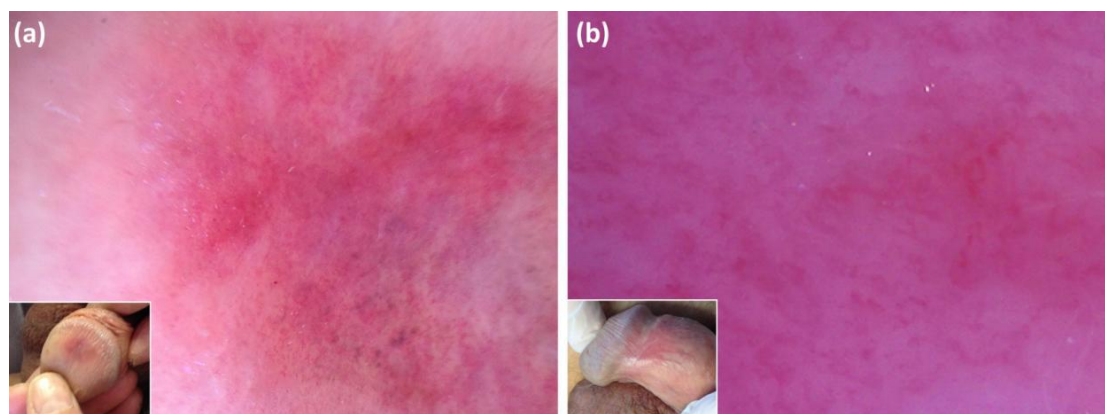


Figure 4. Dermoscopy of a case of fixed drug eruption of the glans shows a purple background and grey-brownish peppering (a), while dermoscopic assessment of irritative balanitis only reveals blurry linear vessels (b).^[20]

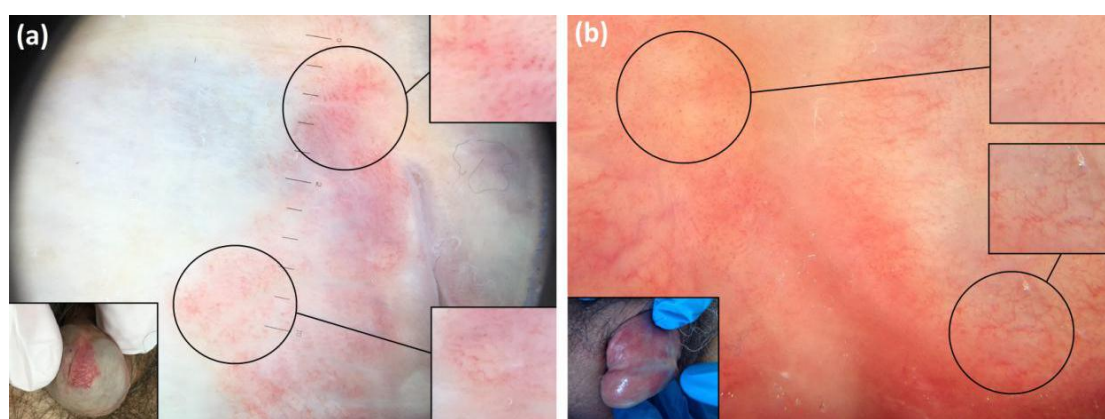


Figure 5. Dermoscopic examination may also be helpful in assisting the recognition of erythroplasia of Queyrat occurring in the context of chronic balanitis. In the first case (a), the typical clustered glomerular vessels of erythroplasia are visible (magnification in the upper right box) along with bright white areas and blurry linear vessels (magnification in the lower right box) which are indicative of lichen sclerosus. In the second case (b), clustered glomerular vessels of erythroplasia.^[18]

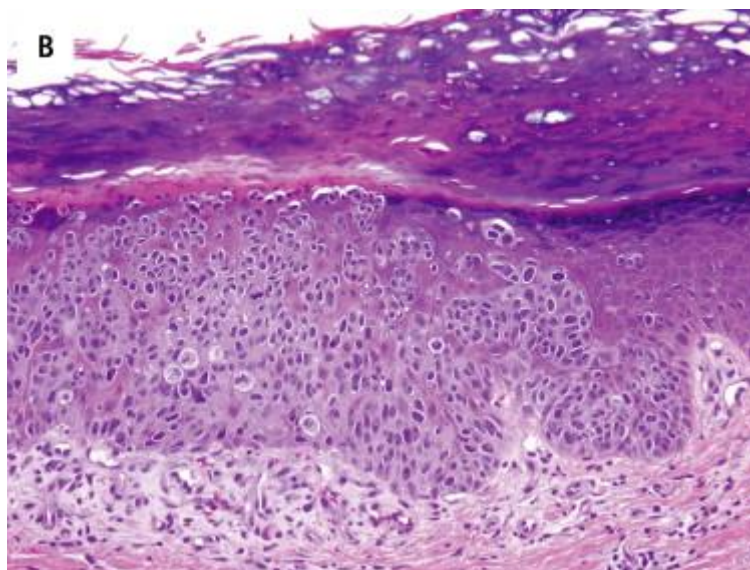
Lab Studies

Diagnosis of EQ must be made via skin biopsy of the affected area. Pay special attention to areas of ulceration or distinct papillomatous lesions, and palpate inguinal nodes. The following diagnostic procedures may be useful in excluding other infectious processes:

- Bacterial/viral/fungal culture
- Tzanck preparation
- Potassium hydroxide examination
- Gram stain

Histologic Findings

The epidermis shows acanthosis and loss of normal architecture. It is replaced by atypical hyperplastic keratinocytes characterized by disorientation, dyskeratosis, and mitotic figures. The rete ridges appear elongated and thickened with intervening dermal papillae reduced to thin strands.^[8,19]



Erythroplasia of Queyrat (Histopathology)

TREATMENT

Medical Care

Selected cases of EQ have been treated successfully using 5-fluorouracil.^[1,3] Interestingly, another report showed temporary resolution using oral isotretinoin, but the lesion recurred after discontinuation of the medication.^[4]

Case reports have shown imiquimod (Aldara) to have potential efficacy in the treatment of EQ.^[5] Larger placebo-controlled studies are needed to confirm this initial data. Finally, photodynamic therapy is also a promising modality.^[3]

Surgical Care

Mohs micrographic surgery has proven to be the surgical treatment of choice in EQ.^[1] Other modalities reported to treat EQ successfully include the following:

- Cryotherapy
- Electrodesiccation and curettage
- Carbon dioxide laser ablation.

Further Outpatient Care

Close follow-up monitoring is required for patients treated medically or surgically for EQ. Local recurrence rates range from 3-10%.^[1,3]

Prognosis

Early diagnosis and treatment provide patients with an excellent chance of cure. Most studies show the cure rate to be greater than 90%.^[4]

Mortality/Morbidity

EQ is treatable if underlying invasive carcinoma does not exist; however, as many as 10% of patients with EQ may have invasive squamous cell carcinoma in the primary lesion. Extension of cancerous cells into the submucosa is associated with a 20% incidence of regional lymph node metastases.^[1,2]

Prevention

Early men circumcision decrease the risk of EQ. Effective treatment and minimization of the inflammation from any infectious or inflammatory process is important. All transplantation patients or any patients on immunosuppressive medications should undergo a thorough cutaneous examination to include genital skin as part of the initial workup and any subsequent visit.^[1,3]

Patient Education

Instruct patients concerning personal hygiene and the importance of cleansing beneath the foreskin to minimize the irritant effects of urine and smegma. Additionally, emphasize the importance of preventing sexually transmitted diseases such as genital herpes, human papillomavirus, and bacterial infections.^[1]

CONCLUSIONS

EQ and penile inflammatory diseases may display different dermoscopic patterns, thereby using dermoscope as a supportive non-invasive tool for the recognition and differential diagnosis of such conditions. dermoscopy may also be used as a guide for the biopsy in order to collect the most representative sample for the pathologist, especially when EQ occurs on top of an inflammatory disease.^[18,19]

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