Squamous carcinoma of the penis: a case report

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Introdution

Penile cancer is a relatively rare neoplasm in the developed world and 95% of the cases histologically correspond to squamous cell carcinoma (SCC)(1). Although it accounts for 10%– 20% of all malignancies in males in Asia, Africa, and South America, it has a prevalence of only 1% in Western countries (2). In the United States and Europe, SCC of the penis accounts for 0.4 to 0.7% of all malignancies found in men; the incidence varies from 0.1 to 0.7 per 100,000 population (1).

Several etiologic risk factors have been recognized in the development of this malignancy. Infection with oncogenic types of Human Papilloma Virus (HPV) and lichen sclerosus seem to be the main risk factors for this neoplasm, but also, lack of neonatal circumcision (especially when associated with phimosis), and exposure to tobacco, among other causes, have been implicated (3).

We describe an interesting case of a squamous cell carcinoma of the penis in a 67-year-old patient with a 9-months history of tumor growth associated with phimosis , for which total penectomy, perineal urethrostomy and bilateral inguinal lymphadenectomy were carried out.

Case report

A 67-year-old man with a 9-months history of penile tumor growth associated with surface ulceration attended the our Hospital. The presence of phimosis was observed in the previous month during urological examination. The patient denied any hematuria and urinary symptoms. Physical examination indicated the presence of a solid swelling at the level of the distal portion of the penis associated with foul smelling purulent ulceration involving the skin nearby (Fig.1). Examination of the urethra, scrotum and testes were normal.

Several movable inguinal lymph nodes of 1.0–1.5 cm in size with moderate consistency could be palpated on both sides. The results of laboratory examinations were normal except for leucocytosis. He had full genital screening but the tests were negative for gonorrhoea, chlamydia, mycoplasma, ureaplasma and Trichomonas vaginalis. Subpreputial swab taken for candida was also negative. Antibiotics had been administered for 2 weeks, without improvements. In agreement with the urologist, the patient underwent to ultrasound exam of the penis that showed a solid inhomogeneus mass involving the corpora cavernosa associated to thickening of the tunica albuginea (Fig. 2). The Color-Doppler US reveled an incresed arterial vascularization of the solid lesion (Fig.3a) and, partly, of the corpora cavernosa (Fig.3b).

Under continuous epidural anesthesia, total penectomy with perineal urethrostomy and bilateral inguinal lymphadenectomy were carried out. Postoperative pathological investigations confirmed that it was a moderate-differentiated squamous cell carcinoma of the penis involving the Buck fascia, the corpora cavernosa and the skin nearby, whereas the surgical margin was negative. Inguinal lymph nodes showed lymphoid inflammatory hyperplasia without metastatic disease. Neither recurrence nor distant metastasis has been observed during a 10- month follow-up visit.

Normal Penile Anatomy and B-mode ultrasound appearances

The penis is composed of three cylindric structures consisting of endothelium-lined cavernous spaces: two dorsal corpora cavernosa and the ventral corpus spongiosum (Fig 4). The corpora cavernosa are the main erectile bodies, and the corpus spongiosum contains the urethra.

A layer of fibrous tissue, the tunica albuginea, surrounds each corpus cavernosum and the corpus spongiosum. All three corpora are sur- rounded by two outer fascial layers, one deep (Buck fascia) and one superficial (Colles fascia).

The arterial supply to the penis is from the internal pudenal artery, which divides into terminal branches, the dorsal penile artery, the cavernosal artery and bulbar artery. Emissary veins pierce the tunica albuginea, drain into the deep dorsal vein via the spongiosal, circumflex and cavernosal veins.(4)

The corpora cavernosa and the corpus spongiosum manifest at US as homogeneous cylindric structures. The urethra can be evaluated at US after distending it with fluid. The tunica albuginea and the Buck fascia are stuck together and appear as a thin echogenic line surrounding the three corpora. The Colles fascia is barely visible in healthy patients. On transverse US images, the cavernosal arteries appear as a pair of dots, whereas on longitudinal images they manifest as linear or narrow tubular structures. The dorsal vessels are visible as anechoic structures in the dorsal aspect of the penile shaft. Color Doppler US clearly depicts the penile vasculature (5).

Discussion

Penile cancer is seen in men in the 6th and 7th decades of life; less than one-quarter of patients are under 40 years of age. The most important etiologic factor in penile cancer is the presence of foreskin, which results in the accumulation of smegma. Therefore, the risk of this disease is three times higher in uncircumcised men than in circumcised men. Poor hygiene also contributes to the development of penile cancer through the accumulation of smegma and other irritants. The presence of phimosis has a strong association with penile cancer and is seen in 25% of penile cancer patients. Other important risk factors include chronic inflammatory conditions (eg, balanoposthitis, lichen sclerosus et atrophicus), smoking, human papilloma virus 16, and human papilloma virus 18 (2).

Primary neoplasms of the penis can be classified into the following histologic types: squamous cell carcinoma, sarcoma, melanoma, basal cell carcinoma, and lymphoma. Squamous cell carcinoma accounts for more than 95% of all primary neoplasms of the penis. Squamous cell carcinoma of the penis is most commonly located in the glans penis (48% of cases). In decreasing order of frequency, other locations include the prepuce (21% of cases), glans penis and prepuce (9%), coronal sulcus (6%), and shaft (2%) (2). The spread of penile cancer usually occurs via lymphatic vessels, with the Buck fascia acting as a barrier to corporal invasion and hematogenous spread. Invariably, the lymphatic vessels of the penis first drain into the inguinal nodes before reaching the pelvic nodes (2). Distant metastases are uncommon in patients who present with penile cancer (<3%-5% of cases). Generally, hematogenous metastases occur late in the disease course and are associated with a dismal prognosis (6).Appropriate management and treatment outcomes in men with penile cancer depend critically on the correct diagnosis, grading and staging of the malignancy.

Grading of penile SCC is usually determinated by the degree of cell anaplasia. A common approach is to grade penile cancer as grade 1, well differentiated (no evidence of anaplasia); grade 2, moderately differentiated (< 50% anaplasia); grade 3, poorly differentiated (> 50% anaplastic cell).

A more sophisticated system with 4 grades has been proposed accrding to the degree of keratinization, cell atypia, mitotic activity, and the amount of inflammatory cell infiltrate (7). Historically, several staging systems have been used for carcinoma of the penis. The Jackson system (Table 1) was introduced in 1966, and the TNM classification was introduced in 1968 and revised in 1978, 1987, and 2002 (Table 2) (6). In this article we want to underline the importance of early diagnosis of penile cancer through clinical examination and ultrasonography. Clinical examination and palpation of the primary tumor and the inguinal nodes has been the traditional approach for assessment of local invasion of the corpora and skin and evaluation for inguinal nodal metastases (2). Infact, clinical examination of the primary penile lesion should evaluate and document the number of lesions, tumor dimensions (size), sites involved (foreskin, glans, shaft), color, morfology (flat, papillary, nodular, ulcerating, fungating), relationship with other structures (corpus spongiosum, corpora cavernosa, urethra), and boundaries (edges) (6). Although physical examination can reliably help predict primary tumor size and the extent of cavernosal infiltration with a high positive predictive value, primary tumor staging by means of palpation can sometimes result in understaging of the disease or overstaging from edema and infection. Tumors with minimal or no infiltration but presenting as large exophytic growths may also be overstaged clinically (8, 9).

Also, nodal assessment based on the palpation of inguinal lymph nodes can produce both false-positive and false-negative results (10).

For these reasons, US has a very important role in the management of penile cancer. In our experience, we found that the penile anatomy was easily demonstrated by sonography and that any encroachment by a mass was clearly evident. Any breach in the tunica albuginea was seen, and urethral involvement—even when clinically silent— was disclosed.

US can also demonstrate the tumor invasion of the tunica or corpora cavernosa and accurately assess regional lynph nodes.

In conclusion, although clinical examination remains the first approach for the diagnosis and staging of penile cancer, US can complement clinical examination and can be used to evaluate the primary lesion for local invasion, assess the status of the regional lymph nodes, and look for evidence of distant metastases.

Table 1. Jackson Classification of Penile Carcinoma

Stage	Involvement
1	Confined to the glans penis
2	Invasion of the shaft or corpora
3	Operable inguinal lymph node metastasis
4	Invasion of adjacent structures, inoperable inguinal lymph node metastasis

| Stage	Current category (TNM 2002)
Tx	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Tis	Carcinoma in situ
Ta	Non invasive verrucous carcinoma
T1	Tumor invades subepithelial connective tissue
T2	Tumor invades corpus spongiosum or cavernosum
T3	Tumor invades urethra or prostate
T4	Tumor invades other adjacent structures
Nx	Regional lynph nodes cannot be assessed
N0	No regional lynph nodes metastasis
N1	Metastasis in a single superficial inguinal lynph node
N2	Metastasis in a multiple or bilateral superficial lynph nodes
N3	Metastasis in deep inguinal or pelvic lynph nodes, unilateral or bilateral

Figure 1. The image shows an increase in size of the distal portion of the penis associated with phimosis and ulceration of the glans

Figure 2. Transverse US image of the penis showed a solid inhomogeneus mass involving the corpora cavernosa associated to thickening of the tunica albuginea.
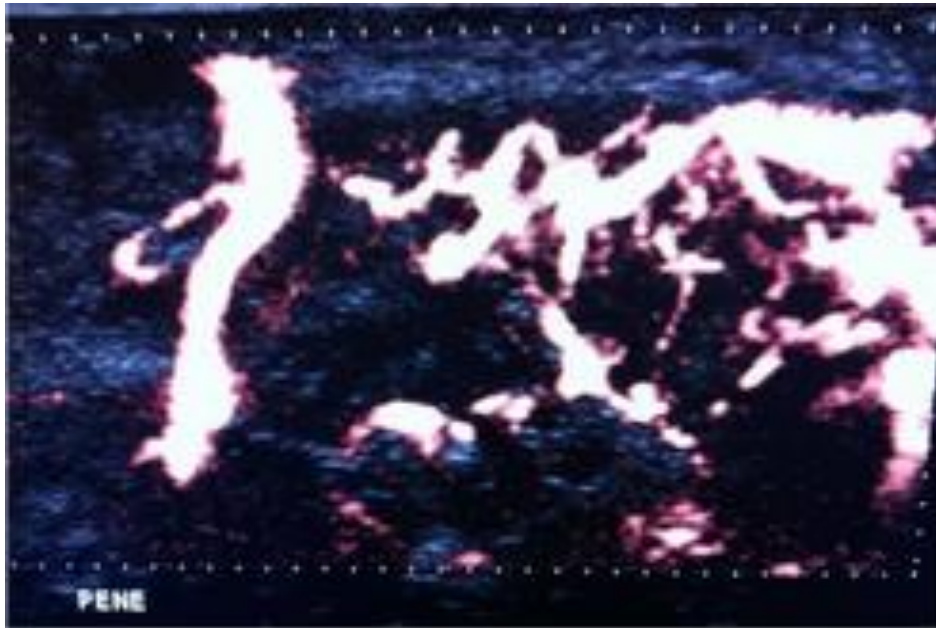
Figure 3 a.

Figure 3b. The Color-Doppler US reveled an incresed arterial vascularization of the solid lesion (Fig.3 a) and, partly, of the corpora cavernosa (Fig.3 b).

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