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Ischemic gangrene of the penis: Experience of the Urology Department, Hassan II University Hospital, Fez (about 5 cases)

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Abstract

Penile gangrene is a rare clinical entity, most often reflecting advanced peripheral arterial disease and posing significant therapeutic challenges. It predominantly occurs in patients with diabetes mellitus, established arteriopathy, or chronic renal failure. Owing to the lack of standardized management guidelines, four therapeutic approaches are generally described: conservative management, circumcision, penectomy, and parathyroidectomy.

This retrospective study was conducted over a 10-year period (2015–2025) in the urology department of CHU Hassan II and included five cases of penile gangrene. The parameters analyzed comprised patient age, risk factors, clinical presentation, paraclinical findings, and therapeutic modalities.

The patients' ages ranged from 58 to 78 years, with a median age of 65 years. Clinically, all patients (100%) presented with penile black discoloration associated with erectile dysfunction, with an International Index of Erectile Function (IIEF) score ranging from 5 to 12. Penile pain was reported in two patients (40%), while one patient (20%) presented with acute urinary retention. Physical examination findings were otherwise unremarkable. Common risk factors identified across all cases included advanced age, chronic renal insufficiency, diabetes mellitus, and a history of smoking.

Surgical management consisted of partial penectomy in four patients (80%), whereas one patient (20%) refused surgical intervention. Postoperative outcomes were generally favorable, with three patients (60%) discharged between postoperative days 4 and 8. However, one patient (20%) developed necrosis of the glans and distal extremities, leading to death within six days due to hemodynamic instability.

Ischemic penile gangrene remains a rare but severe condition, frequently associated with advanced peripheral vascular disease. Diabetes mellitus and end-stage renal failure constitute the principal etiological factors. Two main therapeutic strategies can be considered: conservative management and radical surgical treatment, primarily based on penectomy. The prognosis is generally poor, with a high mortality rate, largely dependent on the patient's general condition and associated comorbidities.

Keywords: Peripheral arterial disease; Chronic renal failure; Diabetes mellitus

1. Introduction

Calciphylaxis, or uremic calcifying arteriopathy, is a rare but a serious complication affecting patients with end-stage renal disease undergoing dialysis [1]. It results from calcium deposits in small- and medium-sized arteries, leading to necrotic skin ulcerations [2].

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Penile involvement is exceptional, as the penis benefits from a rich vascular supply. When it does occur, it indicates advanced peripheral arteriopathy [1]. Penile gangrene progresses slowly and is often associated with diabetes mellitus and end-stage chronic kidney disease [3]. Other factors have been reported: coagulation disorders, neoplasms, infections, and trauma. Clinically, dry (ischemic) gangrene is distinguished from wet (infectious) gangrene, which guides the therapeutic strategy.

Conservative treatment can be attempted in limited cases, but partial or total penectomy is often necessary. Diagnosis is based on clinical examination and imaging. The prognosis remains poor, with a high risk of mortality and a major impact on quality of life [2,4].

This study aims to analyze 5 clinical cases managed at Hassan II University Hospital in Fez, emphasizing the importance of rapid, multidisciplinary, and individualized care. The objective is to optimize survival and preservation of genital function.

2. Materials and Methods

This is a retrospective study conducted over 10 years (2015–2025) in the urology department of CHU Hassan II in Fès, including 5 cases of ischemic gangrene of the penis. Clinical, biological, and paraclinical data were collected for each patient.

The parameters analyzed included age, medical history, clinical signs, risk factors (diabetes, chronic kidney disease, hypertension, smoking, atherosclerosis), and the circumstances of occurrence.

Objectives of the study:

- To identify the prevalence and risk factors.
- To understand the pathophysiology of penile ischemia.
- To assess early diagnostic tools.
- To study the efficacy of medical and surgical treatments.
- Propose prevention strategies targeting modifiable risk factors.
- Analyze the impact on quality of life (sexual and psychological function).
- Record complications and postoperative outcomes.
- Monitor patients long-term for risks of recurrence.
- Formulate clinical recommendations for better care.

3. Results

Over a 10-year period, 5 cases of ischemic gangrene of the penis were recorded (0.5 cases/year). The mean age was 65years, mostly between 61–70 years. 60% of the patients were chronic smokers, 80% were diabetic, and 60% had chronic kidney failure.

The majority consulted within 2 to 15 days after the onset of the first symptoms. The main clinical signs were black discoloration of the penis (100%), erectile dysfunction (100%), and pain (40%). Laboratory tests revealed leukocytosis, anemia, and elevated CRP in all cases. Four patients (80%) underwent partial penectomy, and one refused the procedure.

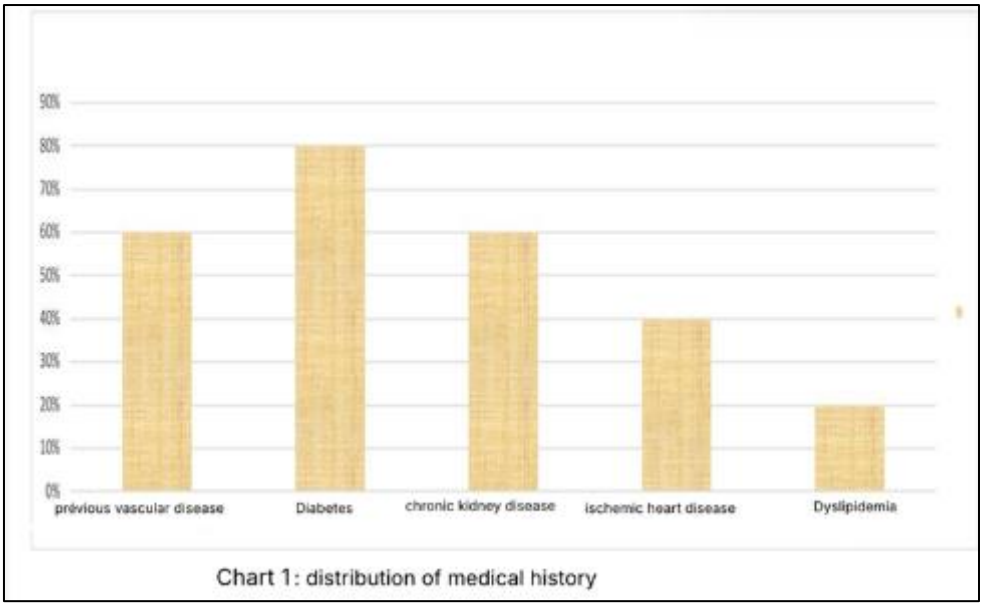

Figure 1 Distribution of medical history

Postoperative outcomes were favorable in 3 patients; the others developed sepsis or experienced worsening of their condition. Three deaths were recorded, while two patients survived for more than two years.

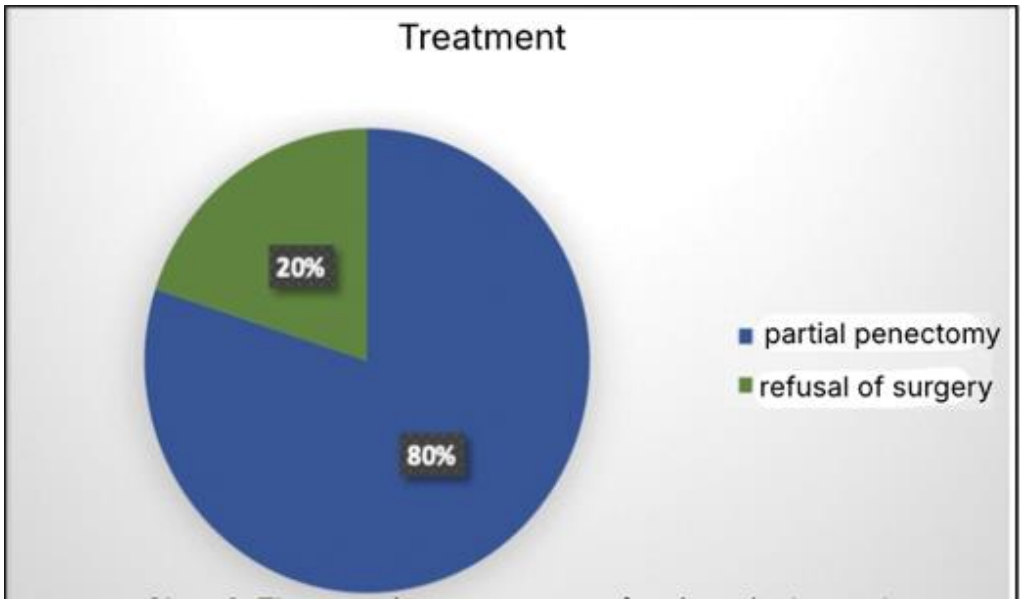

Figure 2 Therapeutic management of patients in the study

4. Discussion

Calciphylaxis is a rare disease characterized by arterial calcifications and severe tissue ischemia, affecting 1% of patients with end-stage renal disease. Penile involvement is exceptional but serious, with a high mortality rate. Gangrene can be dry (ischemic) or wet (infectious) [2].

Historically described by Selye, it has been reported in a few case series, including ours (5 cases over 10 years). The average age of onset is 65 years. Risk factors include diabetes, chronic kidney disease, coagulation disorders, and atherosclerosis.

Clinically, symptoms are dominated by black discoloration of the penis and erectile dysfunction (100% of cases). Diagnosis is based on clinical examination, laboratory findings (hyperphosphatemia, elevated PTH), imaging (CT scan, angiography), and histology showing necrosis and calcium deposits. Urine cultures are most often sterile [1,2].

Figure 3 Image showing localized necrosis on the dorsal surface of the glans

The treatment aims to halt the progression of necrosis, alleviate pain, and, if possible, preserve genital function. Options range from therapeutic abstention (for critically ill patients) to medical treatment (painkillers, antibiotics, low-molecular-weight heparin, hyperbaric oxygen therapy).

Surgical treatment is the most common, including circumcision, partial penectomy, or debridement depending on the extent of the lesions. A cystostomy may be necessary in cases of urinary obstruction. Parathyroidectomy is recommended in cases of severe hyperparathyroidism. In our series, 4 patients underwent partial penectomy, while 1 refused the procedure. The mortality rate was 40%. The prognosis remains poor, especially for patients with significant comorbidities. The psychological impact is major: anxiety, depression, disturbances of self-image, and sexual problems are common.

The prognosis for patients with ischemic gangrene of the penis is poor. Karpman et al. [6] reported a mortality rate of 69%. In our series, the mortality rate was 40%.

Partial penectomy, mainly used to treat penile cancer, is often poorly accepted by patients due to its aesthetic and psychosexual impact. The majority of patients report anxiety (29.5%) or depression (6%) after the procedure. Among those who were sexually active before the operation, only one third resume sexual activity, often hindered by shame related to the appearance of the penis [7,8].

If conservative treatment fails, surgery becomes inevitable. Clear information and informed consent are essential, as well as postoperative psychosocial support [9].

A multidisciplinary approach, including psychological support, is essential. Informed consent is indispensable, anticipating a possible penectomy.

5. Conclusion

Penile calciphylaxis is a rare condition with a poor prognosis because it involves small arteries, arterioles, and capillaries throughout the body. Unlike other forms of penile gangrene, such as Fournier's gangrene, the effectiveness of aggressive surgical treatment is controversial. Patients with extragenital gangrene have higher mortality rates. Due to its rarity, there is no consensus on the treatment of this disease.

Conservative management, sodium thiosulfate, hyperbaric oxygen therapy, stenting of the internal iliac artery, revascularization surgery, penectomy, and parathyroidectomy have all been described.

A review of the literature showed that penectomy and parathyroidectomy did not offer a significant survival benefit. However, given the lack of a definitive curative treatment, physicians may consider combining different treatment modalities.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] Devey S, Valois A, Cazajous G, et al. Calciphylaxis in hemodialy- sis patients:8 cases treated with sodium thiosulfate. Ann Dermatol Venereol. 2018;145(4):288-292.

[2] HarrisCF,MydloJH.Ischemia and gangrene of the penis. J Urol 2003;169:1795.

[3] Stein, M., Anderson, C., Ricciardi, R., Chamberlin, J. W., Lerner, S. E. and Glicklich, D.: Penile gangrene associated with chronic renal failure: report of 7 cases and review of the liter- ature. J Urol, 152: 2014, 1994

[4] Ni Chiang, MD,* Shang-Jen Chang,MD,† Yuh-Chen Kuo, MD,‡ Shih-Ping Liu, MD,* MD* Management of Ischemic Penile Gangrene: Prompt Partial Penectomy and Other Treatment Options

[5] Jhaveri, F. M., Woosley, J. T. and Fried, F. A.: Penile calciphy- laxis: rare necrotic lesions in chronic renal failure patients. J Urol, 160: 764, 1998

[6] EDWARD KARPMAN, SAKTI DAS AND ERIC A. KURZROCK PENILE CALCIPHYLAXIS: ANALYSIS OF RISK FACTORS AND MORTALITY

[7] Ficarra V, Mofferdin A, D'Amico A, Zanon G, Schiavone D, Malossini G. Comparison of the quality of life of patients treated by surgery or radio- therapy in epidermoid cancer of the penis. Prog Urol 1999;9:715–20.

[8] Romero FR, Romero KR, Mattos MA, Garcia CR, Fernandes RC, Perez MD. Sexual function after partial penectomy for penile cancer. Urology 2005; 66:1292–5.

[9] Tarik El Moutawakkil1,, Khalid Elmortaji1, Amine Arsalane1, Driss Ellahik1, Rachid Aboutaieb1, Redouane Rabii1, Fethi Meziane1 La gangrène ischémique de la verge chez un patient diabétique: à propos d'un cas