

## Ischemic gangrene of the penis in a diabetic patient: A case report

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### Abstract

Gangrene of the penis is a rare but serious pathology. The etiologies are diverse with diabetes being the main one.

We report the case of a 65 years old diabetic and chronic smoker who presented a necrosis of the penis and had a total amputation of the penis.

The evolution was marked by the development of sepsis and death of the patient.

**Keywords:** Diabetes; Ischemic gangrene; Penis; Rare disease

### 1. Introduction

Gangrene of the penis is a rare entity that often reflects severe peripheral arterial disease and can pose difficulties in management.

It occurs primarily in patients with diabetes, arterial disease, or chronic renal failure. Although the penis and distal glans have abundant arterial vascularity, arterial necrosis similar to the ischemic gangrene often noted in the extremities of the limbs can occur as a result of arterial occlusion.

Medical imaging primarily MRI, allows for clear definition of the boundaries of the necrotic area. Treatment is essentially surgical [1]. We report a case of necrosis of the penis, treated by total amputation.

### 2. Case report

A 65-year-old man, chronic smoker, type 2 diabetes, on oral antidiabetics, poorly balanced (Hb1Ac 9.5%).

He presented to the emergency room with a blackish discoloration of the glans penis that had appeared 5 days earlier.

On clinical examination, the patient was polypneic and tachycardic, febrile at 38.6.

Examination of the external genitalia revealed localized necrosis on the dorsal aspect of the glans. The scrotum was normal in appearance. No urinary signs. Biological workup showed hyperglycemia at 3.5 g/l, with glycosuria on urine

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dipstick without ketonuria, hyperleukocytosis at 22000/ml, normal renal function. The ECBU was sterile. MRI was not immediately available.

The patient was hospitalized and put on antibiotics and heparin, and underwent an emergency total penectomy, followed by local care. The evolution was marked by deterioration of the general condition, diabetic ketoacidosis and the onset of severe sepsis.

The patient was transferred to the intensive care unit. The patient died 36 hours later.

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### 3. Discussion

Ischemic gangrene of the penis is a rare urological emergency that can present in two forms with different treatments. Wet gangrene or infectious necrosis of the penis has a high morbidity and mortality due to the high risk of sepsis. Its management consists of an emergency necrosectomy. As for dry gangrene, two therapeutic attitudes are possible: surgery (partial or total penectomy and penile revascularization [1]) and conservative treatment. However, conservative treatment is usually followed by surgery because the evolution of dry gangrene is often towards infection, liquefaction or progression [2]. This conservative treatment is proposed for inoperable or end-stage patients and for those with very circumscribed ischemic lesions [2].

Ischemia or veno-occlusive disease is often the cause of dry gangrene. It is progressive because the rich vascularization of the penis is ensured by three arteries: the dorsal artery, the cavernous artery and the bulbourethral artery, all of which come from the internal pudendal artery. In addition, there are physiological variations with an alternative extra-penile arterial system originating from the external obturator and the iliac arteries [3].

Dry gangrene of the penis is often secondary to diabetes, arterial disease, or end-stage renal disease [4,5]. End-stage renal disease may be complicated by systemic calciphylaxis but also by secondary hyperparathyroidism which may also be responsible for penile artery calciphylaxis [6,7].

We performed a total penectomy in this patient. The evaluation of the extent of necrosis is often underestimated intraoperatively, hence the need to perform magnetic resonance imaging to better define the boundary between necrotic and healthy tissue [8,5,9].



**Figure 1** Ventral side of the penis

In all cases, the vital prognosis of patients with ischemic gangrene of the penis is poor. Karpman et al [7] found a mortality rate of 69%. The patient had had a bad experience with penectomy, which was difficult to accept at the beginning. He had deliberately stopped eating [10].



**Figure 2** Dorsal side of the penis



**Figure 3** Dorsal side of the penis

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#### **4. Conclusion**

Dry gangrene of the penis is a rare entity that often reflects severe peripheral arterial disease. Diabetes mellitus and end-stage renal disease are the main incriminating factors. Two therapeutic strategies can be considered. Conservative

treatment and radical surgical treatment based on penectomy. To avoid medico-legal complications, an informed consent must be signed, including the possibility of penectomy, as clinical signs may not reflect intraoperative findings.

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### **Compliance with ethical standards**

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#### *Disclosure of conflict of interest*

No conflict of interest.

#### *Statement of informed consent*

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

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