



Penile necrosis associated with aortic dissection: A case report

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ABSTRACT

Aorta dissection (AD) is a rare, life-threatening disorder resulting from a tear in the aortic wall and can blocking the circulation below the tear. The paired internal pudendal arteries, which are branches of the internal iliac arteries from the aortic branches, supply the penis with blood. Ischemia of the penis is uncommon due to its superior collateral arteries. In this case, we discuss a rare case of 30-year-old male with acute limb ischemia, necrosis of the penis, and scrotum gangrene that associated with ischemic related to aortic dissection.

1. Introduction

Aorta dissection (AD) is a rare, life-threatening disorder resulting from a tear in the aortic wall. Aortic dissection is induced by intimal-medial tear and tearing, resulting in the creation of a false lumen. AD is associated with a high death rate, with an estimated incidence of 3–4 cases per 100,000 people each year. Type A dissection is characterized by a tear in the ascending aorta, whereas type B dissection is characterized by a rip distal to the left subclavian artery in the descending aorta.¹

The paired internal pudendal arteries, branches of the internal iliac arteries from the aorta, supply the penis with blood. This circulatory network can be disrupted by AD, resulting in penile necrosis.^{2,3}

We discuss the case of a 30-year-old male with acute limb ischemia, necrosis of the penis, and scrotum gangrene. This is one of the few instances of penile and scrotal necrosis that highlights the peculiar pattern of decreased blood flow congruent with this patient's clinical complaints.

2. Case presentation

A 30-year old male patient came to the Cipto Mangunkusumo Hospital with complaints of paralysis of both legs and the skin getting darker 2 weeks before admission. The patient was consulted by general surgeon due to pain and darkening of the scrotum and penis. The patient said the complaint appeared after the patient's waist was strained when playing a kite. About an hour after the incident he felt very weak and loss the urge to urinate and defecate. The patient complained of bedwetting. There is no haematuria or cloudy urine. The physical examination showed local bluish on the both legs to the level of the femoral half and

any stimulus was not felt showing a sign of diminished circulation to the lower part of the body. The genital status showed visible necrosis from the penis to the scrotum, some appear hyperaemia without pus or active bleeding (Fig. 1). FC 16 French was placed with normal urine production. Patients underwent laboratory tests that showed a sign of systemic infections with WBC reached 27.000 per mm.

The patient was diagnosed with acute limb ischemia and penile necrosis. Therefore, the patient underwent an aorta thoracoabdominal CT Scan with contrast to confirm the potential cause of these conditions.

The CT-Scan (Fig. 2) showed a dissection from the aortic arch to the abdominal aorta about 2 cm above the common iliac bifurcation, and proximal a. superior mesenteric (Stanford B, DeBakey III), with an intimal tear (inlet) at the level of the aortic arch about 2.3 cm distal to the branch of the left subclavian artery. Truncus celiacus, superior mesenteric artery, and left renal artery originate from the false lumen. Thrombus in the false lumen of the abdominal aorta at infrarenal level causing occlusion of the distal abdominal aorta, accompanied by collateralization in the common bilateral femoral artery from branches of the superficial anterior artery and bilateral lateral abdominal walls arteries.

On the next day, the patient was prepared for Thoracic Endovascular Aortic Repair (TEVAR) and open thrombectomy to treat the life-threatening aortic dissection to resolve the ischemia problem. The patient was unconscious and put on ventilator in the intensive care unit (ICU) after the procedure.

Debridement and amputation was performed in the following 4 days after TEVAR procedure. The debridement of the penis and scrotum was planned and followed with the amputation above the knee procedure for both legs to get over the source of infection by the vascular surgery division. Urinary diversion with percutaneous cystostomy was performed.

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Fig. 1. Pre-operative clinical documentations, a visible necrosis from penis to scrotum, some appears hyperemia without pus or active bleeding.

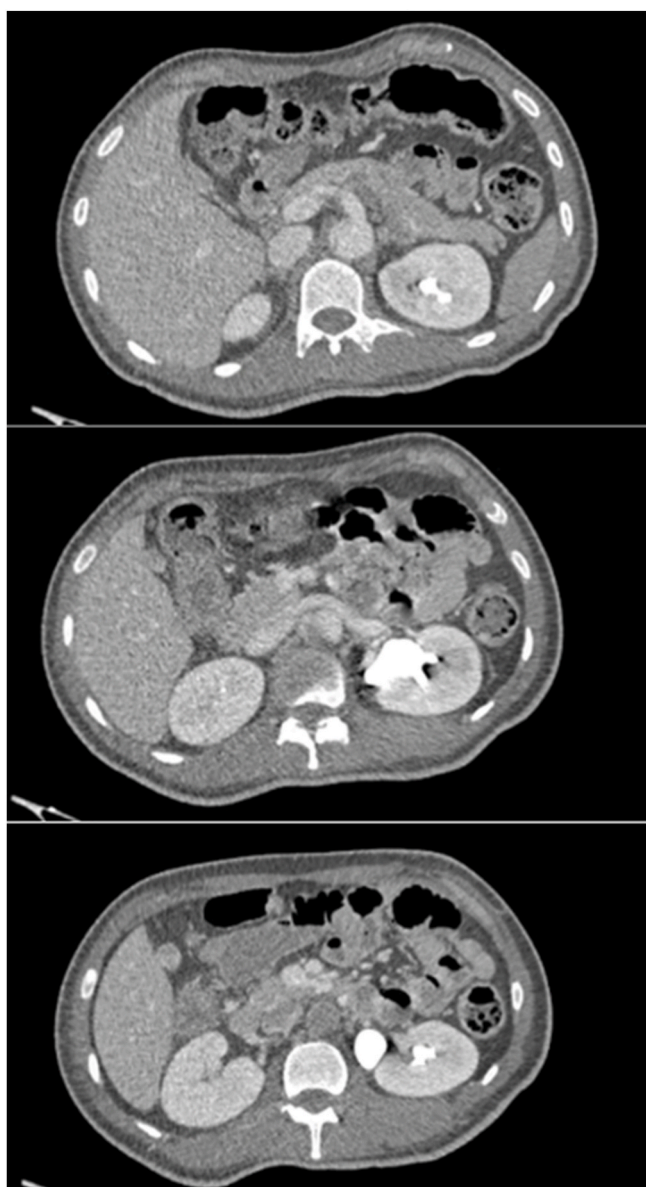


Fig. 2. CT-Scan of the patient showed dissection from the aortic arch to the abdominal aorta about 2 cm above the common iliac bifurcation, and proximal a. superior mesenteric (Stanford B, DeBakey III), with an intimal tear (inlet) at the level of the aortic arch about 2.3 cm distal to the branch of the left subclavian artery and thrombus in the false lumen of the abdominal aorta at infrarenal level causing occlusion of the distal abdominal aorta.

Some glans and skin of the penile shaft were black with the appearance of necrosis and blackish scrotal skin was observed with slough. Removal of necrotic tissue from the glans penis, penile shaft, and scrotum was performed until healthy tissue is exposed. Debridement was performed until healthy tissue is acquired and refreshed the borders of the previous incision and removed fibrotic tissue (Fig. 3). The wound was treated openly and patient was sent back to the intensive care unit for further monitoring. Nevertheless, the patient condition worsened due to septic shock and multiorgan dysfunction. The patient died during the post-operative care day-8.

3. Discussion

In this case, the patient experienced Stanford B/De Bakey III causing ischemia in the lower part that interferes with circulation to the iliac arteries which also provide blood supply to the perineal area and genital organs. The internal pudendal arteries branch off into the bulbourethral arteries, which supply the bulb and penile urethra, the dorsal penile arteries, which supply the glans, and the cavernosal arteries, which play a crucial part in the process of tumescence and erection. This intricate vascular network is essential for sustaining the penis' physiological function. This circulatory network can be disrupted by AD, resulting in penile necrosis.¹⁻³

In this patient, the necrotic tissue was found only on the outer part. Hence, debridement was performed to remove the necrotic tissue and infected part instead of a penectomy. The healthy tissue can be found hypothetically due to the collateralization process during the ischemia period. The supply for the tissue could be coming from the formed collateral arteries. Then, the refreshed healthy tissue is determined to be treated openly. In elective surgical cases, there is no harm in leaving the wounds open postoperatively. These wounds can be better managed by leaving the wound exposed to air by the application of 5% povidone iodine solution daily on them. This method not only helps in arresting the infective pathology at a lesser stage but also saves surgeon's time and patient's money.^{4,5}

4. Conclusion

Penile necrosis due to aortic dissection is a very rare case that can occur due to diminished of the circulation to the genital organ. Salvaging the healthy tissue with debridement instead of amputation of the penis can be an option based on the healthy tissue evaluation. Furthermore, systematic management had a critical role beside local source control of infection during sepsis treatment for optimal outcome.

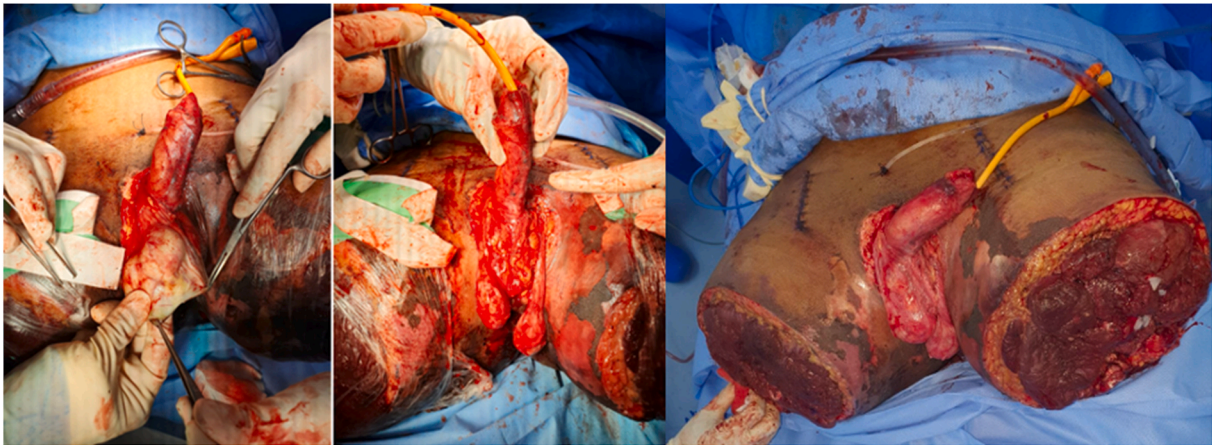


Fig. 3. Post-operative clinical documentation, debridement was performed until healthy tissue is acquired and refreshed the borders of the previous incision and removing fibrotic tissue followed by open wound treatment.

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