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High Flow Priapism and Supraselective Embolization: Case Report and Review

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Abstract

High flow priapism is a persistent erection caused by an excessive arterial flow between a branch of the internal pudendal artery and the lacunary spaces of the cavernous bodies. It is rare, not painful and usually due to perineal trauma. Management is usually conservative; however, when it persists it can be managed with supraselective embolization of the fistula. The aim of this paper is to present a case of this infrequent pathology and a review of the state of the art of supraselective embolization of the fistula.

We report a case of a 41-year-old male patient presenting with a 5-day-history of a semi rigid, not painful erection after a straddle injury that does not resolve with conservative treatment. The Penile Doppler does not show vascular alterations. Due to suspicion of arterio-cavernous fistula a bilateral arteriography of pudendal arteries is performed confirming the diagnosis. It is managed with supraselective embolization of the fistula with resolution of the priapism.

High flow priapism is an infrequent entity in male population. Early identification and management is important due to the difference in the pathophysiology and management when compared to the ischemic priapism. The supraselective embolization is a safe and efficient tool for the management of this entity when it is secondary to an arterio-cavernous fistula.

Keywords: Priapism; Ultrasonography; Doppler Color; Embolization; Radiology; Interventional Gelatin Sponge; Absorbable; Vascular Fistula; Angiography

Introduction

Priapism is defined as an erection that persists longer than 4 hours after an erotic stimulus or that is not related to it. There are three types of priapism: high flow, low flow (ischemic) and stuttering priapism. Low flow priapism has the highest incidence, comprising 95% of the cases [1]. It consists in a rigid and painful erection caused by a lack of venous drainage with consequent absence of arterial flow to the cavernous bodies resulting in hypoxemia and acidosis. Management must be immediate due to the risk of erectile dysfunction. Stuttering priapism consists in painful intermittent and recurrent erections that auto resolve. It is idiopathic, drug induced or associated to sickle cell anemia. High flow priapism manifests as a semi rigid and not painful erection, not associated to sexual activity that presents due to an excessive arterial blood flow caused by an arterio-cavernous fistula or pseudo-aneurysm after a perineal trauma. It does not represent a medical emergency and is usually managed with conservative measures. Supraselective embolization of the fistula can be considered when it persists despite the initial measures. We report a case of a high flow priapism due to an arterio-cavernous fistula after a straddle injury managed with a supraselective embolization of the fistula.

Case Report

We present the case of a 41-year-old male, non-diabetic, non-smoker who presents a 5-day history of a semi rigid, permanent not painful erection that appeared hours after a straddle injury. He received local management with ice and perineal pressure without relief of the symptoms. On the physical exam he presented a non-painful, semi-rigid erection, without or signs of poor perfusion, axial rigidity of 70% and tumescence of 80%. The penile Doppler (Figure 1) reported symmetrical flow in both cavernous arteries, permeability of the dorsal artery as well as the superficial and deep dorsal veins of the penis, which preserved their compressibility.

The cavernous arterial blood gas report (Table 1) was normal, without acid- base imbalance leading to the confirmation of high flow priapism.

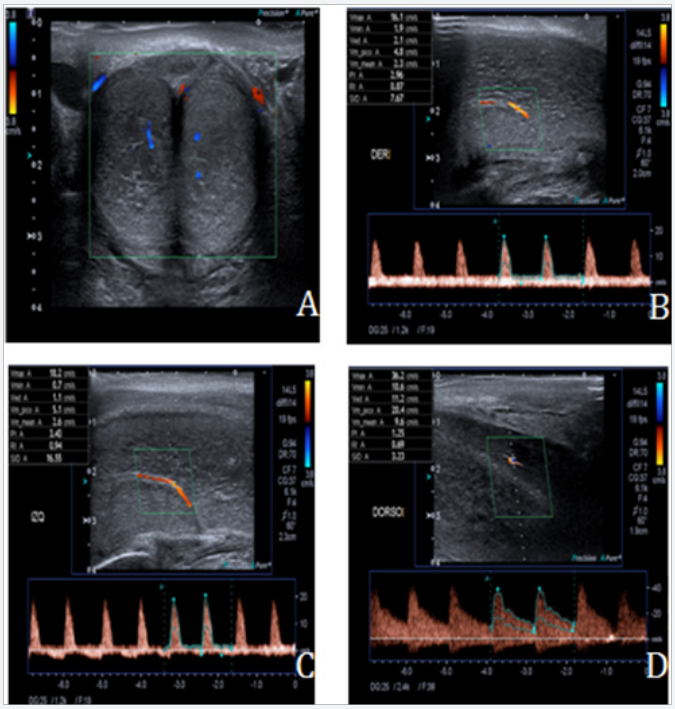

Figure 1: A. Transverse view of the penile doppler; B. Flow of the right dorsal artery of the penis; C. Flow of the left dorsal artery of the penis; D. Flow of the deep dorsal vein of the penis.

Table 1: Cavernous arterial blood gas report.

pH	PCO_2	PO_2	HCO_3	BE	$\%SO_2$	$A\text{-}aDO_2$
7.462	31.2mmHg	66mmHg	22.3mmol/L	- 0.8mmol/L	94.1%	5mmHg

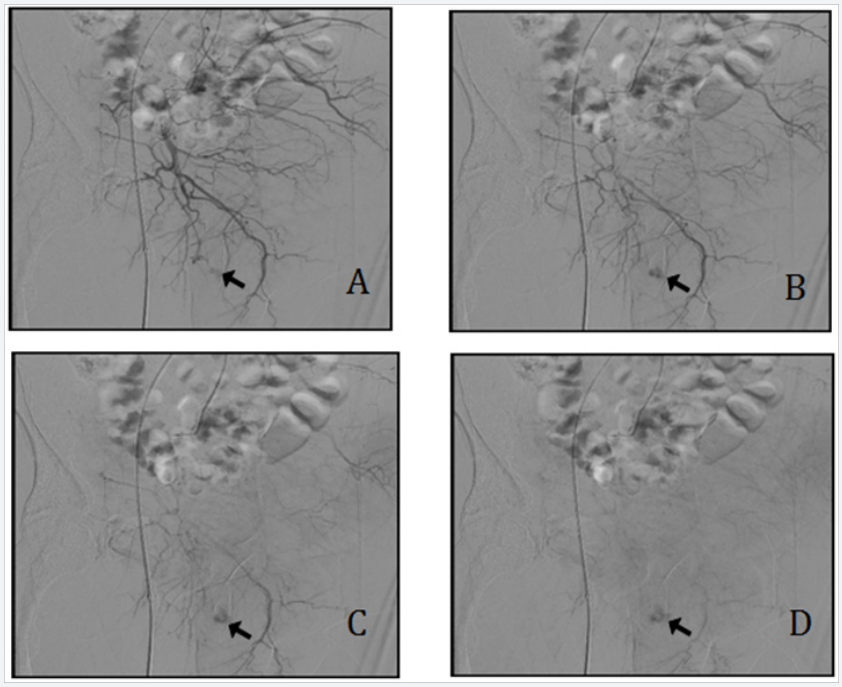

Figure 2: In images A to D there is evidence of extravasation of the contrast medium in the posterior region of the cavernous bodies in a bilateral way.

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Due to suspicion of an arterio-cavernous fistula a 5 Fr catheter was inserted over a guide wire through the right common femoral artery. During the selective arteriography (Figure 2) of the left internal pudendal artery there was confirmation of an arterio-cavernous fistula in the posterior region of the cavernous bodies without achieving opacification of the ipsilateral cavernous artery. While trying to catheterize the vessel with the extravasation a dissection occurred which occluded the fistula. While performing the arteriography of the right pudendal artery there was evidence of an arterio-cavernous fistula. A supraselective embolization of the fistula was performed with Gelfoam with consequent occlusion of the fistula and detumescence. In posterior controls, the patient confirms the presence of tumescence and axial rigidity during erection.

Discussion

High flow priapism is an infrequent entity. It presents as a semi rigid, not painful erection, not associated to sexual activity and usually secondary to perineal trauma with laceration of a cavernous artery that leads to the formation of a fistula to the lacunary spaces of the cavernous bodies [2]. Since the venous drainage remains intact, there is no ischemia, which results in normal arterial gases [3].

Diagnosis is based on clinical history and arterial gases. A penile Doppler differentiates the type of priapism; evidencing a high velocity wave morphology in high flow priapism [4]. Arteriocavernous fistulas are evident as a hypo-echoic area surrounded by echogenic material [5]. Routinely, an angiography is not done since it is an invasive procedure. However, when there is no response to local measures and there is high suspicion of an arterio-cavernous fistula susceptible to be treated by embolization, it must be performed. In angiography it manifests as an extravasation of the contrast medium in the cavernous bodies [6].

Treatment of arterio-cavernous fistulas is conservative since there is no ischemia and 60% of the cases auto-resolve [5]. It includes local measures such as ice to induce vasospasm and local compression to facilitate formation of a clot to occlude the fistula [7]. When it fails, an alternative management is the embolization of the fistula. Materials most recommended for the embolization are those with a temporal effect such as: autologous clot or Gelfoam, with an effect that lasts 5 to 6 weeks. Permanent materials can also be used to prevent recurrence; however, with a greater risk of erectile dysfunction [1], which is the main complication of this procedure, especially when the embolization is performed in a bilateral fashion [8].

Our patient shows no response to conservative treatment so an angiography is performed to confirm the diagnosis and treat the fistula with a supraselective embolization without complications during and after the procedure, which were confirmed in posterior controls, with the presence of tumescence and axial rigidity during erection.

Conclusion

High flow priapism is an infrequent entity often secondary to perineal trauma. It should be suspected with clinical history and arterial gases without acid- base disturbances. Initial management should be with local measures. If response to them is absent, a supraselective embolization has shown to be an effective and safe way of treatment.

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