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Post-traumatic penile pseudoaneurysm causing high-flow priapism: treatment with super-selective micro-coil embolisation after non-successful thrombin injection

Yüksek akımlı priapizm nedeni olan post-travmatik penil pseudoanevrizmanın başarılı olmayan trombin enjeksiyonu sonrası süper seçici mikro-coil embolizasyonu ile tedavisi

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Abstract

Treatment of high-flow priapism varies from watchful waiting to mechanical compression with ice packs, aspiration, intracavernous admission of alpha-

adrenergic agonists or even open surgery with ligation of the artery concerned. Embolisation is also a choice for treatment for high-flow priapism. Autologous clot, gelfoam, N-butyl-cyanoacrylate, and metallic micro-coils have been used as embolic agents.

In our case, we first used thrombin for autologous cloth formation but recanalisation occurred. After two weeks we had to make superselective coil embolisation to bubocavernosal segment of pudental artery.

Micro-coil embolisation was the permanent choice of treatment for post traumatic priapism.

Keywords: Penil anevrizma, Koil embolizasyonu

Introduction

Priapism, a relatively uncommon disorder, is a prolonged penile erection not associated with sexual desire (1). The term is derived from Priapus, the god of fertility in Greek and Roman mythology, who possessed a large phallus (2). It is classified into two forms: low-flow or ischemic priapism and high-flow, non-ischemic priapism.

Low-flow, the most common type, is due to a malfunction of normal veno-occlusive mechanisms resulting in outflow obstruction and high cavernous pressures. High-flow priapism, far less common than the ischemic variant, involves unregulated cavernous arterial inflow. Patients typically present with a painless partial erection following some type of genito-perineal trauma; the resultant arterial damage leads to an arterial-lacunar fistula and occasionally, to an associated pseudoaneurysm. Straddle injuries of the perineum commonly result in traumatic arteriosinusoidal fistula and subsequent high-flow states (3). Traumatic pseudoaneurysm of cavernosal

Özet

Yüksek akımlı priapizm tedavisi buz uygulaması, aspirasyon, intrakavernöz alfa adrenerjik agonist ilaç enjeksiyonu ve kavernozaal arterin açık cerrahi ile bağlanması ile de yapılabilmektedir. Embolizasyon da yüksek akımlı priapizm tedavisi için bir seçenek olabilir. Otolog pıhtı, gelfoam, N-bütül-siyanoakrilat ve metal mikro koiller embolizan materyal olarak kullanılmaktadır.

Bizim vakamızda, ilk seçenek olarak otolog pıhtı oluşumu için trombin kullanılmıştı. Ancak rekanalizasyon oluşumu nedeniyle iki hafta sonra pudental arterin dalı olan bubocavernosal artere süperselektif coil embolizasyonu yapmak zorunda kaldık.

Travmatik priapizm tedavisinde, mikro-coil embolizasyonu kalıcı tedavi seçeneği olmuştur.

Anahtar Kelimeler: Penile aneurysm, Coil embolisation

artery is uncommon but a recognized condition as the patient presents with high flow priapism.

Continuous priapism can lead the corporal fibrosis and erectile dysfunction(4). The current literature accounts for only a handful of case reports describing the use of micro-coils in the treatment of high-flow priapism. (5-7). There is no known case that coil embolisation has done after recanalisation of thrombin injection. Our report also presents a rare case of painless priapism secondary to a pseudoaneurysm of the cavernosal artery, without the presence of an arteriovenous fistula.

Case Report

38-year-old male patient who was working as a constructor has presented to us with complaints of erectile dysfunction and a slight priapism after a blunt trauma directly to the penis shaft. Penile tumescence was present on physical examination but he was given medical treatment in another hospital before. Sonography of the penis was demonstrated a hematoma and a

hypoechoic mass near left cavernosal artery. Both cavernous artery diameter was measured as 0.8 mm without any injection of papaverine. Doppler ultrasound examination demonstrated a turbulent flow and high output current in a hypoechoic lesion measuring 18x11mm (pseudoaneurysm) which is originated from left cavernous artery.

One week from the first examination angiographic examination was done under local anesthesia from right main femoral artery. 6 French(F) pigtail catheter was placed for abdominal aortogram. 4F cobra catheter was introduced to pudental artery through left common and internal iliac artery. A micro catheter(Prograte, Terumo Inc., Tokyo, Japan) was used over the 4F cobra catheter superselectively to the bubocavernous segment of the pudental artery (Figure.1a, Figure.1b).

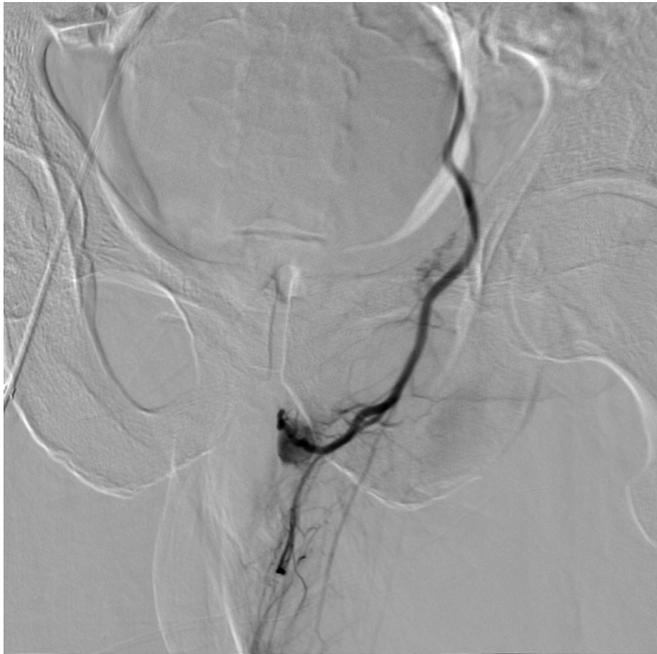


Figure 1a. The digital subtraction image of pseudoaneurysm filling from the branch of left pudental artery anterior posterior view.

Pseudoaneurysm was seen and 0.5cc thrombin injected to lumen by the microcatheter. There was no filling of the pseudoaneurysm at angiographic images obtained after thrombin injection(Fig.2a,2b). Treatment ceased without complications. But 23 days after thrombin injection there was not enough clinical response so the patient re-evaluated with penile color Doppler ultrasound and a slow flow within the pseudoaneurysm was detected.

Twenty-fourth days after the thrombin injection, a control angiography was performed at interventional radiology unit and pseudoaneurysm was seen as patent. We repositioned the microcatheter and deployed 2 microcoil proximal to feeding bubocavernosal branch of pudental artery. Immediately after control angiographic images (Fig.3a,3b) and Doppler ultrasonographic examination one week later from the embolisation there was no filling of pseudoaneurysm.

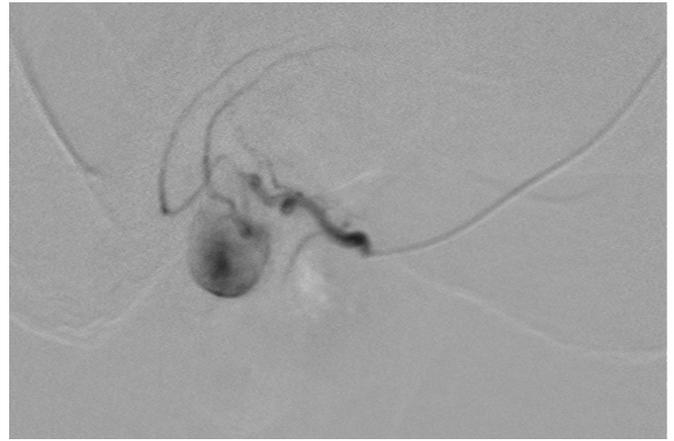


Figure 1b. The digital subtraction image of pseudoaneurysm filling from the branch of left pudental artery lateral view

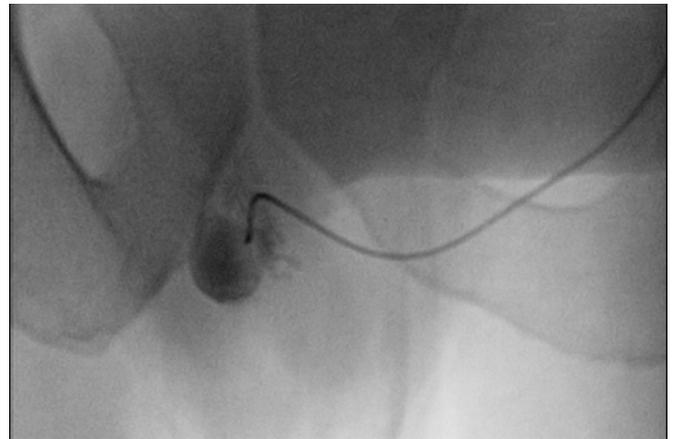


Figure 2a. Digital angiography image before thrombin injection.

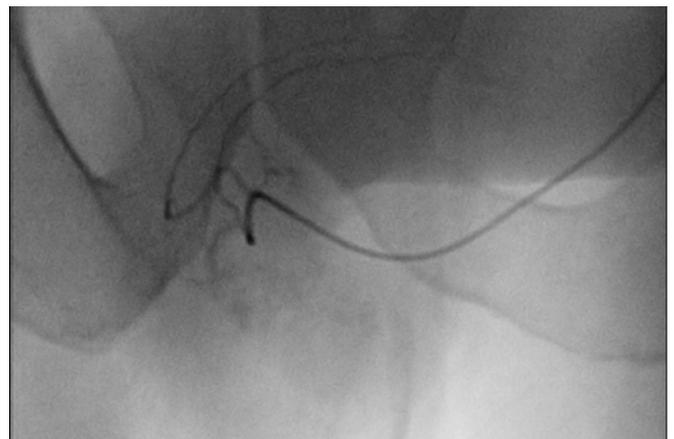


Figure 2b. Digital angiography image after thrombin injection.



Figure 3a. DSA image of pudental artery and pseudoaneurysm before coil embolisation.



Figure 3b. DSA image after coil embolisation of the bubocavernosal segment of pudental artery.

Discussion

Priapism is defined as a prolonged erection state that is not associated with sexual arousal. Priapism, defined by the American Urological Association as a “persistent penile erection that continues hours beyond, or is unrelated to, sexual stimulation”, is an uncommon disorder which is considered a medical emergency (8). Most cases of priapism in adults and in preadolescent boys are of veno-occlusive origin and also known as low-flow (ischemic) priapism.

In these patients tissue ischemia and painful priapism are caused by sluggish flow within the corpora cavernosa, intracavernosal thrombosis, decreased venous outflow and decreased arterial inflow. In the case of veno-occlusive priapism treatment is urgent because cellular damage to the corpora cavernosa results in fibrosis and impotence (9).

During stimulation, the corpus cavernosa muscles contract, increasing arterial flow through the cavernosal arteries into the sinusoidal spaces. The engorged sinusoidal spaces in turn compress the subtunical veins, causing mechanical veno-occlusion, resulting in diminished venous outflow and consequent penile tumescence (10). The helicine arteries are tendril-like, highly resistant end branches of the cavernosal arteries which serve as a protective, regulatory control valve against blood flow into the sinusoidal spaces (8).

Post-traumatic (nonischemic, high-flow) arterial priapism is caused by increased flow into the corpora cavernosa. If the cavernosal or helicine arteries are damaged, blood from a lacerated cavernosal artery flows directly into the cavernosal sinusoids and bypasses the regulatory helicine arterioles (11). During episodes of penile nocturnal tumescence the clot that is formed earlier in the injured artery is disturbed. This is the reason for the delayed onset of priapism after the traumatic event (12). Diagnosis can be confirmed by Doppler sonography, cavernosal blood gas determination or angiography.

Treatment of high-flow priapism varies from watchful waiting to mechanical compression with ice packs, aspiration, intracavernous admission of alpha-adrenergic agonists or even open surgery with ligation of the artery concerned (13). Wear et al. Performed the first embolisation of a high-flow priapism in 1977, using an autologous clot (14). Since then, numerous case reports and review articles have documented the use of embolisation as a treatment for high-flow priapism. Autologous clot, gelfoam, N-butyl-cyanoacrylate, and metallic micro-coils have been used as embolic agents. The radio-opaque characteristic of coils allows precise deployment of the embolic agent. Conservative measures are unlikely to control the high blood flow. Selective embolisation of the feeding arteries can be undertaken. Metallic micro-coils can be radiologically deposited very accurately and safely to produce focal occlusion and resolution of the traumatic pseudoaneurysm, and the arterio-cavernosal fistula.

Conclusion

Based on our experience of this case and from the review of the literature, we conclude that coil embolisation should be considered the therapeutic procedure of the cavernosal artery in cases of posttraumatic fistula or pseudoaneurysm which is much more effective than thrombin injection into the pseudoaneurysm.

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