A male patient with traumatic high-flow priapism is presented in this study. He was diagnosed by angiography and successfully treated by transarterial embolization, followed with an ancillary hematofibrinolytic therapy.

Key words: Angiography, embolization; Penis, priapism

CASE REPORT

A 54-year-old healthy man had an accident about one month ago. He slipped and hit on a protruding object and injured his perineal area. His penis was persistent semi-tumescence for one week since this trauma. No improvement was noted even consulting with clinics. He visited our hospital with painless persistent erection. There were no dysuria or hematuria. The urinalysis, complete blood count, prothrombin time, partial thromboplastin time, liver function studies and chest x-ray were within normal limits. There was no other pertinent history. On physical examination, the indurative mass was palpable in the penoscrotal junction.

A color Doppler sonography was performed and the velocity of arterial flow in the left corpus cavernosum was increased. High flow priapism was suspected and angiography (Fig. 1) was performed from the right femoral arterial approach with a 4-F Cobra catheter (Target Therapeutics, Los Angeles). After the tip of catheter placed at the left internal pudendal artery, the angiography revealed enlarged left internal pudendal artery with extravasation of contrast medium from the left cavernosae artery.

The tip of catheter was sent to the left penile artery, embolized with Gelfoam strips. The post-TAE angiogram (Fig. 2) showed the left penile artery was completely embolized, sparing the scrotal branch. The right internal pudendal artery was also catheterized and no reperfusion from the transverse communicating root. After embolization, the patient was discharged and followed up at the out-patient department. The sustained erection was improved at least 50%, but it did not subside completely. A dose of 106 U of
streptokinase for the hemolysis and fibrinolysis (1) was administrated twice with intracorporeal instillation. After two-week follow-up, his penis was almost recovered. His morning erection was normal and he was satisfied with successful sex life after three months.

DISCUSSION

Prolonged pathologic and painful erection of the penis is termed priapism, usually caused by venous occlusion or thrombosis and treated with intracavernosal injection of vaso-active agents. In the majority of patients, no definite etiologic factor can be identified. In the less common condition, however, the priapism can be caused by abnormally increased arterial inflow with normal venous outflow, termed as “high-flow” priapism. Traumatic or surgically induced priapism is due to the unregulated arterial inflow entering the lacunar spaces directly without neurologically stimulated compression of the subtunical venules, leading to unlimited venous outflow and thereby preventing pooling of lacunar blood and obstruction of arterial inflow, hence absence of ischemia and pain.

An excess of arterial flow in the corpora cavernosa stretches the areolae and causes penile erection. Due to lack of venous occlusion, high-flow priapism is therefore a classically non-ischemic and painless phenomenon. Nevertheless if erection persists, blood viscosity rises because of the increased CO₂ tension, producing a relative venous occlusion and consequent hemostasis. Edema of the trabeculae further reduces the venous outflow and eventually causes occlusion of the arterioles. Fibrosis of the trabecular tissue
is the final event and makes adequate erection impossible (2). Although conservative therapeutically attempts should be first suggested in high flow priapism, prolonged unrelieved priapism almost inevitably leads to subsequent permanent impotence from fibrosis of the corpora cavernosa.

High-flow priapism is quite a rare event and the first successful management by selective arterial embolization was reported by Wear and coworkers in 1977 (3). More recently, platinum microcoils have been used. Most cases are directly caused by trauma, including the reported intracorporeal papaverine injection (4). Reduction of the arterial overflow should be the first step of any therapeutic effort. This can be effectively achieved by surgical penile arterial ligation, but operation may cause more extensive architectural damage and fibrotic change, which may result in permanent impotence.

Superselective embolization can be tried first. The materials of embolization used in previous articles include the autologous blood clot (5) and Gelfoam. In this case, the main trunk of bleeding source (left cavernosal artery from the left penile artery) was successfully occluded with Gelfoam strips. In our opinion, we prefer the Gelfoam to the autologous blood clot, since the Gelfoam will not dissolve in the consequence of hematofibrinolytic therapy.

To our knowledge, there were no reports of superselective embolization of penile artery in addition to a hematofibrinolytic therapy for high-flow priapism. Local fibrinolysis is the additional advantage of producing fewer side effect and is an ancillary method after angiographic treatment of priapism (6).

**REFERENCES**

以血管攝影診斷高血流性陰莖異常勃起並經由選擇性導管栓塞以及血栓溶解治療

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因外傷引起的異常血流增加而勃起並不常見。我們成功利用經動脈導管栓塞來治療一位病人因不慎踩到路中空洞，傷及鼠蹊部，而造成陰莖異常勃起的個案。

關鍵詞：血管攝影，栓塞；陰莖，異常勃起