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Post-traumatic arterial priapism evaluation with color Doppler ultrasonography: a case report

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POST-TRAUMATIC ARTERIAL PRIAPISM EVALUATION
WITH COLOR DOPPLER ULTRASONOGRAPHY:
A CASE REPORT

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The patient was a 19-year-old man who was examined due to persistent penile erection, which appeared following a blow to the perineal region during work. Color Doppler ultrasonography of the corpora cavernosa revealed a cavity in one part of the cavernous artery that suggested a blood leak, and a diagnosis of high flow type priapism due to trauma was made. Bilateral internal pudendal arteriography demonstrated dilation and extravasation in one part of the right cavernous artery, then transarterial embolization was performed superselectively in the right cavernous artery using an autologous clot. However, 2 weeks after treatment, slight penile erection reoccurred. Color Doppler ultrasonography revealed reformation of the cavity at the treated lesion, and embolization was again performed using a gelatin sponge. Following embolization, the course proceeded satisfactorily without any relapse. Color Doppler ultrasonography, which is non-invasive and can be easily performed, is considered to be an effective means for diagnosis and follow up of arterial high flow priapism.

Key words: Priapism, Ultrasonography, Embolization

INTRODUCTION

Priapism is a relatively rare idiopathic disease or a disease with various causes. We experienced a case of traumatic high flow priapism that occurred following a blow to the perineal region. Arterial embolization using an autologous clot was first performed, but due to a relapse, a second embolization using a gelatin sponge was performed. Here, we report the usefulness of color Doppler ultrasonography for both diagnosis and post-operative follow up in such a case of high flow priapism.

CASE REPORT

A 19-year-old man received a blow to the perineal region after accidentally falling from a stepladder during work. One hour after the accident, he experienced a persistent penile erection. As he had persistent erection and penile pain, he was referred to our institution.

Hematuria was not detected in the urinalysis, and no notable abnormal findings were seen in the peripheral blood or in biochemical tests of the blood. The results of cavernous blood gas analysis (pH 7.429, Po₂ 80.7 mmHg and Pco₂ 41.8 mmHg) showed that the blood was bright red and close to arterial blood.

Color Doppler ultrasonography performed on the penis showed a cavity with arterial pulsations and a turbulent blood flow in the right corpora cavernosa near the crus (Fig. 1). Cavernosography showed extravasation of the contrast medium in the crus and a flow of the contrast medium to the veins immediately after injection. As there was no clear obstruction to the venous system, the persistent penile erection was diagnosed as a high flow priapism, that was caused by damage to the artery flowing into the corpora cavernosa from a blow to the perineal region. No urethral injury was found. Selective internal pudendal arteriography on the right side revealed a cavernous arterial blush consistent with a lacerated branch of the cavernous artery. An angiographic catheter was advanced through the right cavernous artery, and embolization was performed with a 4.5 ml autologous clot (Fig. 2). Immediately after embolization, the fistula was completely occluded and the penis became flaccid. The cavity also disappeared from the color Doppler ultrasonography.

Two weeks later, he felt again mildly persistent erection, and a cavity-reformation was revealed on
color Doppler ultrasonography (Fig. 3). A second embolization was performed using a gelatin sponge, which takes a longer time to be absorbed than an autologous clot. Following the second embolization, penile relaxation was obtained and the cavity disappeared on color Doppler ultrasonography. Although the patient has not yet achieved full erection, Rigi scan which was performed 14 days after embolization demonstrated normal nocturnal penile tumescence. The post-operative course was uneventful without recurrence of priapism up to a year.

**DISCUSSION**

Priapism is a morbid condition of persistent penile erection, which arises when the blood flow to the corpora cavernosa is obstructed, leading to an increase in pressure inside the corpora cavernosa. Priapism can be classified into two types, the low flow and the high flow types, according to the differences in blood dynamics. In the high flow type, the cavernous artery is damaged due to a traumatic injury such as that in the present case. This results in the formation of an A-V fistula between the artery and the cavernous sinus, and the inflow of arterial blood into the penis exceeds the outflow of blood from the penis, which is the cause of this type of priapism.

To identify the lesion in the blood vessel, cavernosography and internal pudendal arteriography have been used. However, color Doppler ultrasonography allows very detailed observation of the blood flow. It can show the turbulent flow due to the outflow of arterial blood from the damaged blood vessel, and a diagnosis of high flow priapism can be obtained in almost all cases by the use of this method. As color Doppler ultrasonography can be performed easily and is non-invasive, it is considered to be a very useful method not only for diagnosis but also, as in the present case, for monitoring for relapse following therapy.

High flow priapism is generally treated by embolization of the damaged blood vessel, and an autologous clot is most widely used as the embolus. An autologous clot causes very little damage to tissue compared to emboli such as coils. It also allows reopening of the blood vessel by thrombolysis and therefore has the advantage of preventing post-operative impotence. However, there have also been reports of relapse following this method of embolization. Relapse also occurred in the present case and the patient was treated successfully by a second embolization using a gelatin sponge, which has a longer absorption time than an autologous clot. Thus, although embolization using an autologous clot is a useful method for treating high flow priapism, in the case of relapse, an embolus having a longer absorption time may be considered.

On the other hand, surgical treatment of high-flow priapism often results in post-operative impotence, and there is opinion that high flow priapism should
not be treated but just followed if there are no obvious subjective symptoms such as pain, and if sexual intercourse is possible. Thus, observation of the course should be considered as one option in the treatment of high flow priapism.

**CONCLUSION**

We reported a case of post-traumatic arterial priapism and proved it to be valuable as part of the diagnostic evaluation.

**REFERENCES**


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和文抄録

カラードゥプラー超音波が有効であった外傷後に生じた
動腺性持続勃起症の1例

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症例は19歳、男性。仕事中に会陰部を強打、その後
より持続する陰茎勃起が出現するため受診。カラード
ップラーウにて右陰茎海綿体腳部に血液の leak と思
われる cavity を認め、high-flow type の外傷性
priapism と診断した。両側陰部動脈造影を施行し
たところ、右海綿体動脈の一部に造影剤の滲漫像を認
めたため、自己血凝血塊を用いた動腺塞栓術を施行し
た。しかし治療2週間後より再び持続性勃起を認める
ようになり、カラードゥプラーで前回と同じ部位に
cavity の再発を認めたため、今回は自己血凝血塊よ
りもさらに吸収時間の長い gelatin sponge を用いて
再度、動腺塞栓術を施行した。その後再発を認め
ることなく経過している。本症の診断と治療後の経過観
察において、カラードゥプラーは優位もなく容易に行
うことができるため、有用であると考えられた。

（泌尿紀要 45：65-68, 1999）