

The Use of Color Duplex Ultrasound and Magnetic Resonance Imaging in the Dissolution of Idiopathic Recurrent Priapism in Patient with Congenital Penile Curvature – A Case Report

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ABSTRACT

Priapism, penile erection characterized as prolonged and devoid of sexual stimulation or excitement is a rare condition. It is critical to distinguish between low- and high-flow priapism, because the treatment algorithm differs markedly for these 2 conditions. The diagnosis is made clinically and confirmed with color Doppler ultrasonographic imaging (CDUS). We present a 21 year old men with high-flow priapism and left lateral congenital penile curvature. A duplex Winter shunt procedure was employed with corporeal irrigation of heparin solution and adrenalin solution instillation, but the priapism returned 12 hours after. Following several days slow instillation of phenylephrine or adrenaline solution accompanied by oral flutamide therapy resulted in complete detumescence. We used both CDUS and magnetic resonance imaging (MRI) before and after treatment of priapism. Although CDUS has been the primary modality for cross-sectional imaging of the penis, the superior soft-tissue contrast and spatial resolution afforded by MRI provide an opportunity to advance imaging evaluation of this organ..

Key words: penis, priapism, penile curvatures, priapism therapy, color Doppler ultrasound, magnetic resonance imaging

Introduction

Priapism is a pathologic condition of penile erection characterized as prolonged and devoid of sexual stimulation or excitement¹. Priapism occurring without any discernible cause is considered to be idiopathic (60% cases), while remaining 40% of cases are associated with hematologic diseases, penile and pelvic trauma, spinal cord injury, pelvic tumor or infections, and use of medications. Priapism may be classified into high (nonischemic) and low (ischemic) flow types. Congenital curvatures of the penis usually present in otherwise healthy young men between ages of 18 and 30 years.

In this article, we present a 21 year old men with high-flow priapism and left lateral congenital penile cur-

vature using color Doppler ultrasonographic (CDUS) and magnetic resonance imaging (MRI) before and after treatment of priapism.

Case Description

A 21-year-old Caucasian male was presented in our emergency department with painful erection lasting over 20 hours. He has denied any drug use and had no history of trauma or sickle cell disease. Physical examination revealed engorged corpora cavernosa and a soft, well-perfused corpus spongiosum. Results of abdominal and genital examinations were otherwise normal.

CDUS (General Electric Logiq 9 with ultrasound probe of 12 MHz) of an erect penis revealed high-flow state with peak systolic velocity (PSV) of 151.28 cm per second and end diastolic velocity (EDV) of 67.46 cm per second for cavernosal artery (Figure 1). Penile MRI (Siemens Avanto 1.5 T with native and post-contrast sequences) showed erection of both cavernosal bodies with flaccid state of spongiosa. A left-side deviation of penis (known from early childhood) with accompanying curvature was described and a slow and irregular imbibition of proximal parts of both cavernosal bodies (dominantly left-sided) was observed (Figure 2).

Following a short preoperative treatment a duplex Winter shunt procedure was employed with corporeal ir-

rigation of heparin solution and adrenalin solution instillation. Regardless of sedative therapy and cold coating the priapism returned 12 hours after. Following several days slow instillation of phenylephrine (100–200 µg every 5–10 minute) or adrenaline (10–20 µg every 5–10 minute) solution with external compression of the perineum and local application of ice packs, accompanied by oral flutamide therapy (3 times 250 mg daily) resulted in complete detumescence.

During an erect state a digital subtraction angiography of pelvic and penile arteries together with MRI scans of brain and spinal canal were employed. All findings were within normal limits.

After this treatment on first control examination (after one month) initial dose of flutamide was reduced to 250 mg daily. During therapy patient remained in remission with satisfactory potency parameters and side-effect tolerance. Control CDUS in flaccid state showed PSV of 23 cm per second and EDV of 8 cm per second for cavernosal artery (Figure 3). Control penile MRI in flaccid state emphasized left sided deviation together with fibrosis as a potential cause while other findings were normal except congenital penile curvature (Figure 4).

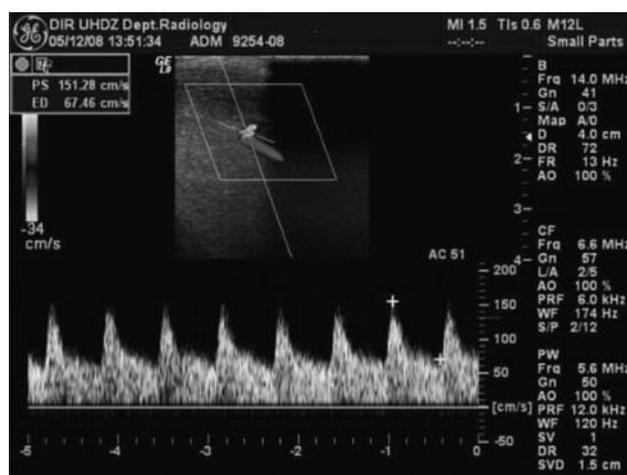


Fig. 1. Initial CDUS cavernosal artery of erect penis revealed high-flow state with peak systolic velocity (PSV) of 151.28 cm per second and end diastolic velocity (EDV) of 67.46 cm per second.

Discussion

Though priapism is a rare condition, the diagnosis is made clinically and confirmed with CDUS. It is critical for clinicians to distinguish between low- and high-flow priapism, because the treatment algorithm differs markedly for these 2 conditions. Low-flow priapism is a urologic emergency because prolonged cavernosal ischemia leads to corporeal fibrosis and permanent erectile dysfunction. Usually, high-flow priapism occur secondary to perineal or penile blunt trauma and results in loss of

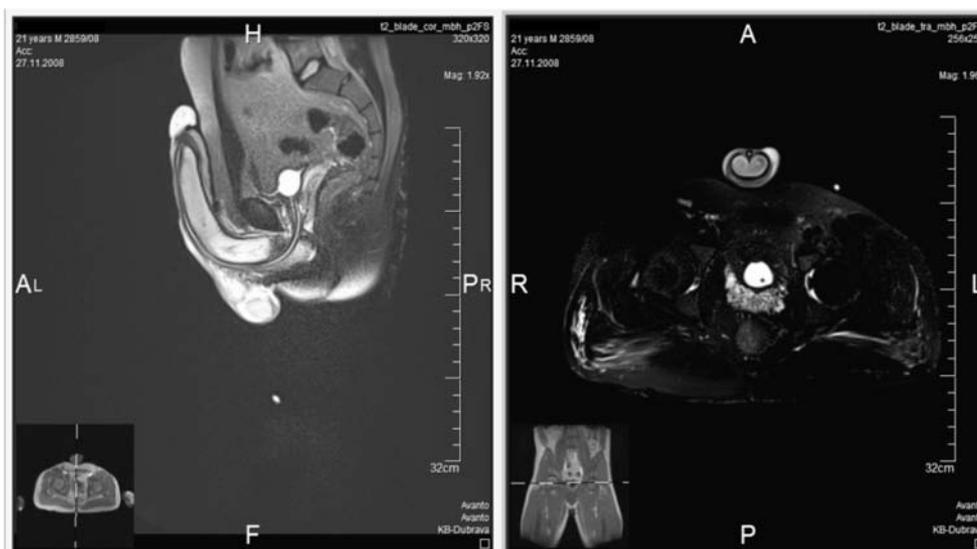


Fig. 2. Initial penile MRI showed erection of both cavernosal bodies with flaccid state of spongiosa. A left-side congenital deviation of penis with accompanying curvature was described and a slow and irregular imbibition of proximal parts of both cavernosal bodies (dominantly left-sided) was observed.

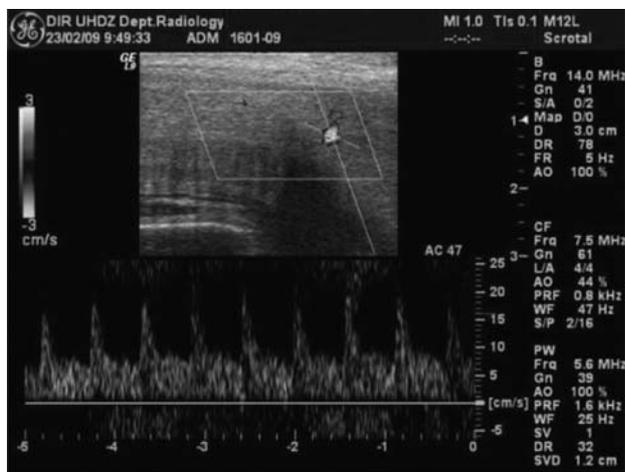


Fig. 3. Control CDUS in flaccid state showed PSV of 23 cm per second and EDV of 8 cm per second for cavernosal artery.

penile blood flow regulation². In our case priapism was idiopathic without trauma or others disorders. CDUS is currently considered the imaging modality of choice for diagnosis of high-flow priapism because it is sensitive, noninvasive, and widely available³.

MRI is potentially useful in the assessment of many penile diseases and congenital anomalies. It is also useful in cases of priapism, where intravenously administered contrast material can help assess the viability of the corpora cavernosa and the presence of penile fibrosis. Although CDUS has been the primary modality for cross-sectional imaging of the penis, the superior soft-tissue contrast and spatial resolution afforded by MRI provide an opportunity to advance imaging evaluation of this organ. Clinical questions that remain unresolved after CDUS examination can often be answered with penile MRI. The best treatment for high-flow priapism still remains controversial. Surgical treatment, which is often considered invasive and may lead to erectile dysfunction, includes several procedures: creation of shunt⁴, ligation of the internal pudendal or cavernosal artery. Watchfull observation⁵ with intracavernosal injection of phenylephrine or adrenaline, external compression of the perineum, and local application of ice have been considered possible treatments. Today, superselective embolization of the torn artery is available for treatment of high-flow priapism².

To our knowledge, this was a first reported case with high-flow priapism and left lateral congenital penile curvature using color Doppler ultrasonographic (CDUS) and magnetic resonance imaging (MRI) before and after treatment of priapism.



Fig. 4. Control penile MRI in flaccid state emphasized left sided deviation together with fibrosis as a potential cause and other findings were normal except congenital penile curvature.

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UPORABA »COLOR DUPLEX« ULTRAZVUKA I MAGNETSKE REZONANCE U LIJEČENJU IDIOPATSKOG REKURENTNOG PRIJAPIZMA U PACIJENTA S KONGENITALNOM KURVATUROM PENISA – PRIKAZ SLUČAJA

S A Ž E T A K

Prijapizam, produljena erekcija penisa bez seksualne stimulacije ili uzbuđenja je rijetko stanje. Ključno je razlučiti između ishemičnog i neishemičnog prijavizma budući se postupnik liječenja ovih dvaju stanja značajno razlikuje. Dijagnoza se postavlja kliničkim pregledom i »Color Doppler« ultrazvukom (CD UZV). Ovdje prikazujemo slučaj 21-godišnjeg muškarca sa neishemičnim prijavizmom i lijevostranom kongenitalnom kurvaturom penisa. Učinjen je dvostruki »Winter shunt« s irigacijom kavernozih tijela heparinom i instalacijom adrenalina, no nakon 12 sati dolazi do povrata prijavizma. Nakon nekoliko dana polagane instalacije fenilefrina ili otopine adrenalina uz oralnu terapiju flutamidom došlo je do potpune detumescencije. Upotrijebili smo i CD UZV i magnetsku rezonancu (MR) prije i poslije liječenja prijavizma. Iako je CD UZV bio primarna metoda slikovne analize penisa, MR svojim superiornim kontrastnim prikazom mekih tkiva i prostornom rezolucijom daje mogućnost bolje slikovne analize ovog organa.