CASE REPORT

Partial priapism

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SUMMARY

With only 34 prior cases in world literature, partial priapism (PP), also called partial segmental thrombosis of the corpus cavernosum, is a rare urological condition. The aetiology and treatment of PP is still unclear, but bicycle riding, trauma, drug usage, sexual intercourse, haematological diseases and α -blockers have been associated with PP. In this case report and world literature review, we describe the case of a 50-year-old man suffering from PP after ingesting 100 mg of sildenafil. The patient was treated with a surgical incision for corpus cavernosum and clot evacuation, as a conservative treatment of PP was not feasible due to severe pain and unresponsiveness to analgesics.

BACKGROUND

Partial priapism (PP), also known as partial segmental thrombosis of the corpus cavernosum, is a rare urological condition. In world literature, only 34 cases have been described and the condition's aetiology and treatment are still controversial. Bicycle riding, trauma, drug usage, sexual intercourse, haematological diseases and α -blockers have been associated with PP.^{1–3} In this report, we describe the first case of PP because of sildenafil ingestion and summarise the world literature on the subject.

CASE PRESENTATION

A 50-year-old man presented with a 13-day history of painful perineal swelling and obstructive lower urinary tract symptoms. The symptoms started a few hours after intercourse. Prior to intercourse, he ingested 100 mg of sildenafil in an attempt to increase his sexual pleasure. He had no history of erectile dysfunction and obtained the drug through an acquaintance without a medical prescription. Also he did not have any history of trauma, bicycle riding, drug abuse or previous priapism. Three days after the pain presented, he consulted a general practitioner who prescribed 300 mg $\times$ 2 lymecyclin on the suspicion of prostate inflammation due to a painful rectal exploration of the prostate, but the pain persisted and was unresponsive to analgesics. A physical examination 13 days after sildenafil ingestion revealed a stiff, painful raised area on the internal proximal part of the penis without any signs of distal erection.

INVESTIGATIONS

Urine analyses were normal and laboratory analyses did not show any signs of infection or haematological disease. An ultrasonographical examination with colour doppler technique (CDU) revealed a right corpus cavernosum with a diameter of 2.5 cm and with no blood flow (figure 1). All other penile parts were normal.

Figure 1 Colour doppler ultrasound showing a segmental thrombosis in the proximal corpus cavernosum.

TREATMENT

Three repeated treatments of a 25 mg ephedrine dose injected directly into the right corpus cavernosum had no effect on the condition, and due to constant pain and lack of response to analgesics, we performed a corporotomy on the right corpus cavernosum. Through a 5 mm longitudinal incision in the tunica albuginea close to the corpus spongiosum and directly into the rigid part of corpus cavernosum in preparation for a cavernosal-spongiosum shunt, dark viscous and coagulated blood was aspirated. This was followed by total remission of the swelling and therefore no shunt was inserted (figure 2). Postoperative, the swelling, pain and obstructive lower urinary tract symptoms disappeared.

Figure 2 Corpus cavernosum with incision (ring).

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OUTCOME AND FOLLOW-UP

At 3-month and 6-month follow-ups, the patient suffered from a minor loss of rigidity during erection, but still had the capacity for penetration during intercourse. No pain, discomforts or urinary tract symptoms persisted.

DISCUSSION

A systematic search on PubMed and Google Scholar using the phases 'partial priapism', 'partial thrombosis of the corpus cavernosum', 'partial segmental priapism', 'partial segmental thrombosis of the corpus' and 'idiopathic partial thrombosis of

the corpus cavernosum' resulted in 34 cases prior to our case of PP. This condition was first described in 1976⁴ and the aetiology still remains unclear due to the low number of reported cases.²

As plausible aetiology, eight cases related to bicycle riding, four to haematological diseases, four to prolonged or vigorous intercourse (penile injury in two cases), two to cocaine/marijuana abuse, one to tamsulosin, one to transcontinental flight and one to sildenafil (present study; table 1). Sixteen case reports also describe or present images with the presence of a membranous septum⁵ consisting of fibrous connective tissue⁶

Table 1 Distribution of cases

	Author	Year	Age	Duration days	Plausible aetiology	Imaging technique	Treatment	Follow-up	Potency preserved
1	Gottesman ⁴	1976	34	4	PI	None	CI	1 month	Yes
2	Hillis and Weems ⁶	1976	24	11	TM	RU	RTM	6 week	Difficulty sustaining full erection
3	Johnson and Corriers ⁷	1980	34	7	PI+TM	None	RTM	18 months	Yes
4	Llado <i>et al</i> ¹¹	1980	23	14	Cycling	None	CI+CSS	Several months	Yes
5	Roa and Roa ¹²	1981	46	3	Idiopathic	None	Analgesics	3 months	Yes
6	Burkhalter and Morano ¹³	1985	21	60	Idiopathic	CT	CI	3 months	Yes
7	Borrelli <i>et al</i> ¹⁴	1986	27	4	Idiopathic	RU	CI	1 year	Yes
8	Kimball <i>et al</i> ¹⁵	1988	51	14	Idiopathic	MRI	No treatment	1 months	Yes
9	Kimball <i>et al</i> ¹⁵	1988	37	14	Idiopathic	MRI	No treatment	1 months	Yes
10	Sparwasser <i>et al</i> ¹⁶	1988	24	35	BD	CDU +cavernosography +CT	CI	No	Unknown
11	De Zan <i>et al</i> ¹⁷	1993	34	1	PI+penile injury	CDU	CI	Unknown	Yes
12	Ptak <i>et al</i> ¹⁸	1994	27	2	Cycling	CT+MRI	ASA	1 week	Yes
13	Albrecht and Stackl ⁹	1997	29	4	Idiopathic	None	AS+ICI	1 day	Yes
14	Machtens <i>et al</i> ¹⁹	1998	44	3	Cycling	MRI	AT 2 week + ASA 6 months	6 months	Yes
15	Thiel <i>et al</i> ²⁰	1998	35	1	BD	CDU+RU+MRI	AT 1 week+ ASA 6 months	6 months	Yes
16	Schneede <i>et al</i> ²¹	1999	24	2	TM	CDU+MRI	RTM	24 months	Yes
17	Lewis <i>et al</i> ²²	2001	24	1	BD	None	CI	12 months	Yes
18	Lewis <i>et al</i> ²²	2001	33	3	Marijuana	CT+RU	ICI+CSS	18 months	Yes
19	Pegios <i>et al</i> ²³	2002	46	10	Hepatitis A	CDU+RU+MRI	AT+ASA	3 months	Yes
20	Goeman <i>et al</i> ²⁴	2003	18	3	Cycling	CDU+MRI	AT 6 week	6 months	Yes
21	Goeman <i>et al</i> ²⁴	2003	27	unknown	Cycling	CDU+MRI	ASA 6 months	6 months	Yes
22	Goeman <i>et al</i> ²⁴	2003	22	10	Cycling	CDU+MRI	ASA 6 months	6 months	Yes
23	Horger <i>et al</i> ²	2005	37	2	Cocaine+marijuana +minor penile injury	MRI	Analgesics and oral pseudoephedrine for 2 weeks	3 months	Yes
24	Dubois <i>et al</i> ¹	2007	26	2	Protein C resistance	MRI	AT+ASA	3 months	Unknown
25	Asbach <i>et al</i> ²⁵	2008	26	6 h	PI	CDU+CT	AT+ASA	6 week	Unknown
26	Blaut <i>et al</i> ²⁶	2008	23	1	BD	CDU+MRI	AT	4 months	Yes
27	Galvin <i>et al</i> ²⁷	2009	22	7	TM	MRI	NSAIDs+ASA	3 months	Yes
28	Kilinc <i>et al</i> ³	2009	59	2	Tamsulosin	MRI	CSS	3 months	Yes
29	Patel <i>et al</i> ²⁸	2010	21	1	Idiopathic	CT+MRI	ASA	1 year	Yes
30	Ilicki <i>et al</i> ¹⁰	2012	20	3	Alcohol+TM	CT+MRI	AT	6 months	Unknown
31	Hulth <i>et al</i> ⁵	2012	19	3	Cycling, TM	CDU+MRI	AT	7 years+10–11 years	Yes
32	Hulth <i>et al</i> ⁵	2012	32	1	TM	CDU+MRI	AT 1 month +ASA 2 months	2 week	Yes
33	Hulth <i>et al</i> ⁵	2012	35	6	Cycling, TM	MRI	AT 2 days, aspirin 7 week.	7 months	Yes
34	Pepe <i>et al</i> ²⁹	2012	51	2	Idiopathic	CDU+MRI	ICI+AT	6 months + 4 years	Impotent (responsive to oral PDE-5 inhibitors)
35	Current	2012	50	13	sildenafil 100 mg (without ED)	CDU	ICI+CI	3 months	Loss of full rigidity

AS, aspiration; ASA, acetylsalicylic acid; AT, Antithrombotic treatment; BD, blood disease; CDU, colour doppler ultrasound; CI, corporal incision; CSS, cavernosal spongiosum shunt; ICI, intracavernosal phenylephrine injection; NSAIDs, non-steroidal antiinflammatory drugs; PDE-5, phosphodiesterase type 5; PI, prolonged intercourse; RTM, removal of transverse membrane; RU, retrograde urethrography; TM, transverse membrane.

between the proximal and distal part of the corpus cavernosum, thus suggesting this membrane of connective tissue is predisposed to segmental thrombosis and thereof to PP. These findings substantiate the hypothesis that minor penile injuries, for example, during extensive bicycling on a hard bicycle seat, are a background for PP, as a fibrous connective tissue membrane could be a consequence of repeated injuries to the corpus cavernosum.^{7–8} The membrane has been suggested as being permeable, as erectile function was present in most patients with PP. If it was not permeable, then the erectile function should have been compromised at an earlier state.⁹ One author suggested a two-hit model in which the permeable transverse membrane of congenital or post-traumatic origin is the basis for a second hit during which the permeable part of the membrane is blocked, for example, after minor trauma, thereby resulting in PP.¹⁰

One patient was, by coincidence, diagnosed with a transverse membrane 7 years before the onset of PP, which supports the two-hit theory as he had normal erectile function for the 7 years before his incidence of PP.⁵ In 35 cases, mainly young men (mean age 31.6 years; range 18–59) presented with symptoms of a painful perineal mass, and in some cases, dysuria caused by the partly erected corpus cavernosum that obstructs the urethra.¹¹ The mean interval from symptom debut to diagnosis was 7.3 days (range 6 h–60 days; table 1). This relatively long diagnostic delay can be explained by the segmental thrombosis that caused a low-pressure condition in the corpus cavernosum comparable with the low-pressure priapism, thus causing less discomfort than for example, high-pressure priapism.³

The differential diagnoses, such as a perineal abscess, enlarged inguinal lymph nodes and prostatitis (due to lower urinary tract symptoms and painful rectal exploration), can lead to inefficient antibiotic treatment and thereby contribute to a delayed diagnose and treatment. In 14 cases, PP was diagnosed by CDU and an enlarged proximal corpus cavernosum with no perfusion was found (table 1). An MRI was used in 21 cases either to confirm the CDU diagnosis or as a primary diagnostic tool (table 1). Both CDUs and MRIs were shown to be efficient in diagnosing PP though an MRI has the advantage of detecting a transverse membrane if one exists. Twelve cases of PP were treated with surgical exploration and corporal incision, clot evacuation or cavernosal-spongiosum shunts. Two patients (17%) reported a loss of full rigidity after surgical intervention.⁵ Less invasive procedures such as intracavernosal ephedrine injections or needle aspiration were attempted in four cases with varying results (table 1). A conservative antithrombotic approach consisting of analgesics and heparin, acetylsalicylic acid or both were used in 16 cases with good long-term results, except in one case where the patient, 7 years after the debut of PP, was treated for a full priapism with drainage followed by loss of rigidity and dependence on oral drugs for good erectile performance.⁵

In conclusion, though PP is a rare condition, it should be considered in patients suffering from a painful perineal mass. The condition can be diagnosed with carefully obtaining an illness history and a clinical examination. Using CDU is fast, feasible and accelerates treatment. An MRI is another option for obtaining the diagnoses. Antithrombotic treatment is now considered a first-choice treatment, but in cases where pain control cannot be obtained by analgesics, corporal incision and clot evacuation are necessary. A cavernosal-spongiosum shunt can be performed in non-responsive cases. In most cases, potency is preserved.

Learning points

- ▶ Partial priapism should be considered in patients suffering from a painful perineal mass.
- ▶ Using colour doppler ultrasound is fast, feasible and accelerates treatment in patient suffering from partial priapism.
- ▶ Antithrombotic treatment is considered as a first-choice treatment.

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