CASE REPORT

Stuttering priapism associated with hereditary spherocytosis

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Stuttering priapism is a clinical phenomenon that occurs commonly in certain patient populations, including sickle cell anemia and other hematologic dyscrasias. Although the mechanism is still not completely understood, treatment is focused on prevention of recurrence in the outpatient setting, and immediate detumescence and minimizing corporal fibrosis in the acute setting. We present a case of stuttering priapism in a 44 year-old male with hereditary spherocytosis and discuss the pathophysiology and clinical management of this entity.

Key Words: priapism, spherocytosis, stuttering

Introduction

Priapism, defined as an erection that persists uncontrollably without sexual purpose, is a urologic emergency that can result in significant morbidity if left untreated.[1] Patients with ischemic priapism may develop a pattern of recurrence over time that is distinct from persistence or rapid recurrence of a single episode of priapism.[2] While the lifetime risk of developing priapism with sickle cell disease has been reported as 29%-42%,[1] solitary or recurrent (stuttering) episodes of priapism has been associated with other hematologic dyscrasias, including hemoglobin Olmsted,[3] thrombophilia[4] and thalassemia.

Case

A 44 year-old male presented to the emergency department with a painful erection lasting in excess of 8 hours. The patient reported no recent sexual activity or arousal, had no known history of sickle cell anemia or trait, no history of malignancy, and denied any recent history of medication changes, perineal trauma, or illicit drug use. His only relevant history

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was the diagnosis of hereditary spherocytosis at age 22 treated with splenectomy and the recent development of stuttering priapism. The patient reported multiple episodes of painful erections in excess of 12 to 24 hours duration over the previous 2-year period despite medical therapy consisting of baclofen and pseudofed. Although a majority of episodes resolved spontaneously, on several occasions interventions including corporal irrigation, phenylepherine injection, and exchange transfusion were required for relief.

Examination revealed a flaccid glans and a 60% erection with proximal corporal fibrosis that was tender to palpation. The rest of his genitourinary examination was unremarkable. Laboratory evaluation revealed a hematocrit of 37.6, platelet count of 404, lactate dehydrogenase of 339 IU/L (normal 105 IU/L-333 IU/L), haptoglobin of 137 mg/dl (normal 27 mg/dl-139 mg/dl), and reticulocyte count of 4.5%. With no evidence of hemolysis, the decision was made to proceed with corporal irrigation. After administration of 1 gm of intravenous cefazolin and hydration with D5 normal saline with bicarbonate, two 18 guage needles were placed into the corpora cavernosa with aspiration of approximately 300 cc clotted blood. Arterial blood gas (pH 6.8, P_{O2} 8.9 mmHg) was consistent with low-flow ischemic priapism, and phenylepherine injection was administered in 500 mcg/ml aliquots every 5 minutes for 1 hour with only partial detumescence and minimal pain relief.

After extensive discussion regarding the risks of worsening corporal fibrosis and erectile dysfunction, the decision was made to proceed with surgical correction. A Winter-Ebbehoj corporoglanular shunt was performed by inserting an 11-blade percutaneously through the glans into each corporal body, with detumescence to approximately 25%. The patient was admitted and observed overnight, but unfortunately developed recurrence of a painful 50% erect state. The patient was taken back to the operating room for further exploration and possible proximal shunting the following morning. An Al-Ghorab shunt was performed in which a 15-blade was used to excise the distal tips of each corporal body with minimal detumescence. At this point, the underlying penile structures were exposed and a proximal Quackels corporospongiosal shunt was performed with almost complete detumescence. After an additional 24-hour observation period, the patient remained pain free in a flaccid state despite significant corporal fibrosis. He was discharged home on Baclofen and Pseudofed, and at a 1 week follow-up visit, the patient had experienced no further episodes of priapism.

Discussion

Hereditary spherocytosis (HS) is a disorder of erythrocyte cell membrane instability leading to chronic hemolysis, anemia, and hypersplenism.[5] The hemolysis of spherocytosis, unlike that of sickle cell anemia, is predominantly extravascular within the spleen. While splenectomy is considered curative with regard to hemolysis, hematologic complications remain in the post-splenectomy phase of spherocytosis as erythrocytes retain their fragility. While thrombocytosis is expected in the post-splenectomy setting, it is rarely associated with thrombotic episodes. However, there are several reports of thrombotic events such as portal vein thrombosis, pulmonary embolus, stroke, and thrombotic thrombocytopenic purpura in the setting of spherocytosis,[6] including one case of priapism. [7] Sparwasser et al reported a case of unilateral segmental priapism in a 24 year-old male with congenital spherocytosis. Caversonography revealed thrombosis of his left proximal corpus cavernosum but, due to his late presentation (5 weeks), corporal irrigation was unsuccessful.[7]

The exact pathophysiological mechanism in recurrent priapism is not fully understood. The etiology of low-flow or ischemic priapism in blood dyscrasias was originally thought to be increased intravacavernous blood viscosity secondary to veno-occlusive disease.[1] To support this theory, Hayag-Barin et al proposed that thrombotic events in HS, including thrombosis of the corpus cavernosum resulting in priapism, was secondary to the release of phospholipids from erythrocyte breakdown resulting in platelet activation.[6] However, emerging research suggests the etiology of recurrent priapism is likely multifactorial and that dysregulation of the nitric oxide signaling pathway may play a significant role. Lin et al demonstrated that phosphodiesterase-5 (PDE5) is down-regulated in ischemic corpus cavernosum smooth muscle cells in vitro. The authors used this conclusion to propose that a state of inadequate oxygenation in sickle cell patients may predispose to recurrent priapism.[8] Furthermore, Champion et al reported decreased PDE5 expression and activity in endothelial nitric oxide synthetase (eNOS) knockout mice and transgenic sickle cell mice, both displaying a priapism phenotype. Restoration of eNOS by gene transfer restored normal PDE5 levels and corrected priapism.[9]

Management strategies for patients with stuttering priapism is challenging and have historically focused on prevention of priapism episodes with systemic oral therapy including antiandrogens, baclofen, digoxin,

pseudofed, and terbutaline.[2] Most evidence of the efficacy of these therapies is anecdotal, although recent reports with the use of PDE5 inhibitors have shown promising results.[10, 11] Medical therapy failures have been managed with self-injection of sympathomimetic agents and placement of penile prosthesis. However, it is paramount to recognize that each episode of recurrence should be managed as an emergency with aspiration/irrigation, intracavernous injection of sympathomimetic agents, or surgical intervention per the AUA guidelines.[2]

The precise etiology of priapism remains unclear, but it has been shown that this phenomenon is more common in patients with hematologic dyscrasias. This case emphasizes that stuttering priapism is an entity not limited to sickle cell anemia, but other dyscrasias including hereditary spherocytosis. Although treatment of the underlying dyscrasia and prevention of recurrence is the goal of directed therapy, priapism remains a urologic emergency that demands immediate attention. Prompt patient recognition and appropriate algorithm based evaluation and treatment offer the most effective management of priapism with the goal of preventing future episodes and long-term complications. □

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