Priaprism

Definition

Abnormal persistent involuntary erection of the penis unrelated to sexual stimulation and unrelieved by ejaculation. A urological emergency.

Pathophysiology

The penis has 3 corporeal bodies: 2 corpora cavernosa and 1 corpus spongiosum. Arterial smooth-muscle relaxation → increased flow into corpora cavernosa → engorgement → compresses venous outflow tracts → erection

Priapism should be defined as either a low-flow (ischaemic from venous outflow obstruction) or high-flow (non-ischaemic, excessive arterial inflow) type because the causes and Rx differ.

Low-flow priapism (more common, if>24h → risk of permanent impotence)

- Excessive release of neurotransmitters
- Blockage of draining venules (e.g. sickle cell crisis, leukaemia, fat embolism)
- Paralysis of the intrinsic detumescence mechanism
- Prolonged relaxation of the intracavernous smooth muscles (e.g. impotence Rx)

High-flow priapism

- Fistula between cavernosal artery & corpus cavernosum 2° to blunt or penetrating injury.

Epidemiology

- 5-10 years or African: mainly sickle cell or neoplasm
- 20-50 years: mostly idiopathic or impotence Rx.

Causes

Low flow/Ischeamic:

- Idiopathic
- Thromboembolic/hypercoagulable states: Sickle cell, polycythaemia, thalassemia, vasculitis, dialysis, fat embolism
- Neurogenic disease: Spinal cord stenosis, autonomic neuropathy and cauda equina syn
- Neoplastic disease: Prostate Ca, bladder cancer, leukaemia, RCC, melanoma
- Pharmacologic:
    - Intracavernosal agents - Papaverine, phentolamine, PGE1
    - Antihypertensives - Ganglion-blocking agents (guanethidine), arterial vasodilators (hydralazine), alpha-antagonists (prazosin), calcium channel blockers
    - Psychotropics - Phenothiazine, butyrophenones, SSRI (eg, fluoxetine, sertraline)
    - Anticoagulants - Heparin, warfarin
    - Recreational drugs - Cocaine, marijuana, ethanol
    - Hormones - GnRH, tamoxifen, testosterone
    - Herbal medicine - Ginkgo biloba with concurrent use of antipsychotic agents
    - Miscellaneous medications - Metoclopramide, omeprazole

High-flow/ Non-ischaemic

- Idiopathic
- GU trauma: Straddle injury, direct cavernosal artery injury on intracavernous injection
- Drugs - Cocaine

Rarely: Redback spider venom, amyloidosis, CO poisoning, malaria, asplenia

Clinical

- Erection > 4hrs
- Low-flow generally painful unlike high-flow
- High-flow priapism usually assoc with trauma e.g. straddle injury
- Check for presence of prosthetic devices: Hardware malfunction → pseudopriapism.

Investigations

Bloods: FBC, coags, penile blood gas from corpus cavernosum, G&H
Imaging Studies: duplex USS (high flow fistula), CXR/CT if ?malignant

Management

Medical Care

ED personnel may begin treatment with saline irrigation and injection of alpha-agonist drugs such as phenylephrine.

Low-flow ischemic priapism

- *Thrombosis:* oxygenation, analgesics, hydration, alkalization, and exchange transfusions
- *Non-thrombotic:* dorsal penile block, intracavernosal phenylephrine (~pure α-agonist 1mg in 10ml NS, fine needle injection of 0.3-0.5mL q10-15min + compression to injection area). Finally try aspiration of the corpora cavernosa with NS irrigation using 18G needle. [Can use adrenaline 2-3ml 1:100,000 if no phenylephrine available]

High-flow priapism

- Selective arterial embolisation

Surgical Care

- Emergent surgical decompression when conservative management fails.
- Transglanular corpus cavernosal scalpel or needle-core biopsy
- Variety of surgical shunts.

Complications

- Erectile dysfunction
- Impotence
- Infection (secondary to trauma or possibly as a result of treatment)

Prognosis

- Prognosis depends on the duration of symptoms, the patient's age, and the underlying pathology. The time to treatment is the single most important factor affecting outcome.
- Patient Education
- >50% of patients with priapism have persistent impotence