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Priapism

Medical Student case-based learning

A 45 year old man presents with an erection
lasting over 5 hours.

What are the two major subtypes of priapism?

Types of Priapism

- Ischemic – veno-occlusive or low flow priapism (little or no cavernosal blood flow).
- Non-ischemic – High flow (unregulated cavernosal arterial inflow).

His past medical history is unremarkable but he reports taking a new medicine which he thinks may have contributed to his priapism.

- What are possible causes of both ischemic and non-ischemic priapism?

Causes of Priapism

- Ischemic priapism
 - Sickle cell disease
 - Neurological disorders
 - Malignancy
 - Intracavernosal injection
 - TPN

Causes of Priapism

- Ischemic priapism – Drug Induced
 - Trazodone
 - Cocaine
 - Alcohol
 - Testosterone
 - Prazosin
 - Heparin

Causes of Priapism

- Non-Ischemic priapism
 - Trauma
 - Iatrogenic
 - Neurogenic

Physical Exam

- What physical exams should be performed when priapism is suspected?
- How can physical exam findings help to differentiate among types of priapism?

Physical Exam



AUAUniversity, “Priapism and Strangulation”
(Betadine soap used as prep for surgery)

- Inspection and Palpation
 - To determine degree of tumescence
 - To determine the severity of pain
 - To identify any trauma or ischemia
- Testicular & abdominal exam
 - Rarely malignancies can cause priapism

History and Physical Exam Findings

History and Exam Findings	Ischemic (Low Flow)	Non-Ischemic (High Flow)
Fully Rigid	Usually	Seldom
Partial Rigidity or Soft	Seldom	Usually
Penile Pain	Usually	Seldom
Perineal Trauma	Seldom	Usually
Hematologic Abnormality	Usually	Seldom
Recent Intracorporal Injection	Sometimes	Sometimes
Abnormal Penile Blood Gas	Usually	Seldom

Labs and Imaging

- What labs or imaging should be ordered when priapism is suspected?
- How can blood gas differentiate between the different types of priapism?

Labs and Imaging

- Labs
 - Corporal blood gas
 - CBC (*to rule out infection and anemia*)
 - Coagulation Panel (*to assess for hematologic disease and if a patient is safe for surgery, if it becomes required*)
 - Hemoglobin electrophoresis (*to determine sickle cell status – primarily patients with African, eastern Mediterranean, and Middle Eastern descent. 8% of black Americans carry the sickle cell gene*)
- Imaging
 - Color Doppler ultrasound (*to determine blood flow*)

Corporal Blood Gas Values

Source	PO ₂ (mmHg)	PCO ₂ (mmHg)	pH	Color of Blood
Normal Arterial Blood	>90	<40	7.40	Bright Red, Oxygenated blood
Normal Mixed Venous Blood	40	50	7.35	Dark, Deoxygenated blood
Ischemic Priapism	<30	>60	<7.25	Dark, Deoxygenated blood

Campbell-Walsh-Wein Urology (12th ed). New York: Elsevier Science.

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A blood gas with “normal arterial blood” and high flow on color Doppler ultrasound is consistent with *non-ischemic priapism*.

The patient appears to have an ischemic priapism. What is the next step?

- A) Oral medications
- B) Ice packs
- C) Penile irrigation and aspiration

C.) Penile irrigation and aspiration is the correct response.

There is no strong evidence to support the use of either oral medications or ice packs.

A penile block was performed to provide adequate analgesia. A 19 gauge needle was inserted into the corpora cavernosa on the lateral aspect of the penis. The corpora were irrigated and aspirated with sterile normal saline. The erection persisted.

What is the next step?

The next step is the injection of an alpha agonist into the corpus cavernosum. The alpha **agonists** act by constricting the cavernous arteries and the smooth muscles around the sinusoids of the corpora.

What is the preferred drug?

Phenylephrine is the preferred agent as it does not have beta adrenergic / cardiac effects. The preferred concentration is 0.5 to 1 mg/ml. It is injected at a volume of 0.5 to 1 ml every 5 minutes for up to an hour or until detumescence occurs.

What side effects are necessary to monitor for when giving phenylephrine?

- Undesirable Effects
 - acute hypertension
 - headache
 - reflex bradycardia or tachycardia
 - palpitations & cardiac arrhythmia.

(If these signs are occurring then the priapism is resolving as the drug is entering into the systemic circulation)

Important Note

In patients with high cardiovascular risk, blood pressure and electrocardiogram monitoring are recommended

Despite injections of phenylephrine for over an hour, the priapism remains. What is the next step?

Urology consultation for a shunt procedure, which will shunt blood from the corpus cavernosum to the corpus spongiosum, glans or alternative venous channels.

References:

AUA Guidelines – Management of Priapism, 2010.
Campbell-Walsh-Wein Urology, 12th edition. Elsevier, New York.