MEDICAL TREATMENT OF LOW FLOW AND HIGH FLOW PRIAPISM

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Definition

- Priapism is a full or partial erection that continues more than 4 hours beyond sexual stimulation and orgasm or is unrelated to sexual stimulation.

# Types of priapism

<table>
<thead>
<tr>
<th>Variant</th>
<th>Penile blood appearance</th>
<th>Penile arterial blood gas findings</th>
<th>Color Duplex ultrasonography findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic priapism</td>
<td>Corpus cavernosum testing: blood is hypoxic and dark in color</td>
<td>Blood gases: $pO_2$ &lt;30 mmHg; $pCO_2$ &gt;60 mmHg; and pH &lt;7.25</td>
<td>Minimal or absent blood flow</td>
</tr>
<tr>
<td>Nonischemic priapism</td>
<td>Corpus cavernosum testing: blood is oxygenated and red</td>
<td>Blood gases: $pO_2$ &gt;90 mmHg; $pCO_2$ &lt;40 mmHg; and pH 7.40 (similar to normal arterial blood)</td>
<td>Blood flow is normal to high in velocity</td>
</tr>
<tr>
<td>Stuttering (recurrent) priapism</td>
<td>Corpus cavernosum testing: blood is hypoxic and dark in color</td>
<td>Blood gases: $pO_2$ &lt;30 mmHg; $pCO_2$ is &gt;60 mmHg; and pH &lt;7.25</td>
<td>Minimal or absent blood flow during acute priapism; normal blood flow otherwise</td>
</tr>
</tbody>
</table>

$pCO_2$, partial pressure of carbon dioxide; $pO_2$, partial pressure of oxygen.
Types of priapism

- Ischemic (veno-occlusive, low flow, IP)
- Non-ischemic (arterial, high flow, NIP)
- Stuttering priapism (intermittent, SP)
<table>
<thead>
<tr>
<th>Condition</th>
<th>Ischemic Priapism</th>
<th>Nonischemic priapism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full rigidity at CC</td>
<td>Usually</td>
<td>Seldom</td>
</tr>
<tr>
<td>Penile pain</td>
<td>Usually</td>
<td>Seldom</td>
</tr>
<tr>
<td>Abnormal blood values</td>
<td>Usually</td>
<td>Seldom</td>
</tr>
<tr>
<td>Hematologic diseases</td>
<td>Sometimes</td>
<td>Seldom</td>
</tr>
<tr>
<td>Intracavernosal vazoactive drug injection</td>
<td>Usually</td>
<td>Sometimes</td>
</tr>
<tr>
<td>Perineal trauma</td>
<td>Seldom</td>
<td>Usually</td>
</tr>
</tbody>
</table>

Ischemic priapism

• 95% of the total cases, most idiopathic

• Compartment syndrome, no arterieal flow

• Accompanied by pain, rigid erection

• Hypoxic, hypercarbic, acidotic blood gas values

• Extensive necrosis after 48-72 hours →ED*

• **This type of priapism is an emergency**


EAU Guidelines 2015.
• Priapism episodes:

- <4 hours, prolonged priapism, no ED
- <24 hours, priapism, % 10 ED
- >24 hours, priapism % 90 ED
- >36 hours % 100 ED
- >72 hours % 50 ED
- >48 hours % 100 ED

Blood Gas Analysis

- \( P_{O2} = 30 \)
- \( P_{CO2} = 65 \)
- \( pH = 7.25 \)

<table>
<thead>
<tr>
<th></th>
<th>( P_{O2} )</th>
<th>( P_{CO2} )</th>
<th>( pH )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic priapism</td>
<td>&lt;30</td>
<td>&gt;60</td>
<td>&lt;7.25</td>
</tr>
<tr>
<td>Normal arterial value</td>
<td>&gt;90</td>
<td>&lt;40</td>
<td>7.40</td>
</tr>
<tr>
<td>Normal venous value</td>
<td>40</td>
<td>50</td>
<td>7.35</td>
</tr>
</tbody>
</table>

If \( P_{O2} > 70 \) mmHg, high flow priapism

If \( P_{O2} < 30 \) mmHg, ischemic priapism
Ischemic Priapism Treatment

Initial conservative measures
- Local anaesthesia of the penis
- Insert wide bore butterfly (16-18G)
- Aspiration cavernosal blood until bright red arterial blood is obtained

Cavernosal irrigation
- Irrigate with 0.90% w/v saline solution

Intracavernosal therapy
- Inject intracavernosal adrenoceptor agonist
- Current first-line therapy is phenylephrine (*) with aliquots of 200 micrograms being injected every 5-10 minutes until detumescence is achieved [Maximum dose of phenylephrine is 1mg within 1 hour(*)]

Surgical therapy
- Surgical shunting
- Consider primary penile implantation if priapism has been present for more than 36 hours

First line treatment

Secondary treatment
First line treatment

- **Penile/ Systemic anesthesia**
  - Severe penile pain
  - No effect on ischemic cavernosal pain
  - May accompany shunt surgery

- **Dorsal nerve block**
- **Circular penile block**
- **Subcutaneous local penile shaft block**
- **Oral sedation (for children)**
First line Treatment

- There is no evidence base proven benefit of treatment techniques such as ice application, exercise, cold water and ejaculation.

<table>
<thead>
<tr>
<th>Method</th>
<th>No.</th>
<th>Successful</th>
<th>Failed</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penile cooling + physical exercise</td>
<td>122</td>
<td>30</td>
<td>92</td>
<td>24.6</td>
</tr>
<tr>
<td>Intracorporal aspiration</td>
<td>92</td>
<td>22</td>
<td>70</td>
<td>23.9</td>
</tr>
<tr>
<td>Aspiration and irrigation with cold saline 10°C (A)</td>
<td>25</td>
<td>24</td>
<td>1</td>
<td>96</td>
</tr>
<tr>
<td>Aspiration and irrigation with cold saline 15°C (B)</td>
<td>15</td>
<td>12</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>Aspiration and irrigation with cold saline 20°C (C)</td>
<td>15</td>
<td>10</td>
<td>5</td>
<td>66.7</td>
</tr>
<tr>
<td>Aspiration and irrigation with saline at 37°C (D)</td>
<td>15</td>
<td>9</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>Intracorporal aspiration and injection of alpha-adrenergic</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

1- AUA Guidelines on Priapism 2003
3- Priapism Recommendations, committee 15, 2010
Medical Treatment

Decompression of the CC aspiration

Efficacy of aspiration without irrigation is $= 36\%^{(1)}$

Efficacy of aspiration and irrigation is $66\%^{(2)}$

1- AUA Guidelines on Priapism 2003
3- Priapism Recommendations, committee 15, 2010
Ischemic Priapism

Lack of smooth muscle contraction in arteries and cavernosal sinusoids

Compartment Syndrome

No arterial flow
Injection of sympathomimetic agents

- Epinephrine, norepinephrine, phenylephrine, ephedrine.
- Corpus cavernosum $\rightarrow \alpha_1a (44\%) > \alpha_1b (22\%) > \alpha_1d (34\%)$
- Phenylephrine is selective $\alpha_1$-adrenergic agonist with minimal $\beta$-adrenergic effects.
<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage/Usage</th>
</tr>
</thead>
</table>
| Phenylephrine        | • Minimum cardiac side effects because of alpha-adrenergic selectivity.  
                       • Inject 1 cc (100-500 mcg) every 3-5 min.  
                       • Max dose. of phenylephrine : 1.5 mg  
                       • Regular monitoring of blood pressure and pulse should be performed (1 case of subarachnoid hemorrhage at a pt. with SCD) |
| Etilefrin            | alpha-adrenergic selectivity  
                       Oral dose 50-100 mg/hour  
                       ICI dose 5-10 mg/ml |
| Metilen blue         | 50-100 mg injection, aspiration after 5 min.                                                                                               |
| Adrenalin (Epinephrine) | Alpha and beta agonist, ICI 10-20 mcg  
                       2 ml 1/100,000 adrenalin solution with 5 min intervals                                                                                     |
| Metaraminol          | Long term alpha adrenergic agonist, no FDA indication for priapism  
                       Safer vasoconstriction than epinephrine  
                       5-10 mg for ICI                                                                                                                                   |
| Terbutaline          | Vaso-active drug, 5 mg oral usage for priapism episodes >2.5 hours                                                                               |
Intracavernosal Injection

- Epinephrine 10-20 µg/ml  
  Detumescence rates: %81
- Metaraminol (5-10 mg)/ml 
  %70
- Norepinephrine (2–4 µg/ml) 
  %43
- Phenylephrine (100-500 µg/ml) 
  %65
- Metilen blue (50-100mg/5 ml) 
  %67
- Etilefrin (5-10 mg/ml) 
  AUA,2003
- Ephedrine (50-100 µg/ml) 
  
<table>
<thead>
<tr>
<th></th>
<th>Alfa 1</th>
<th>Beta 1</th>
<th>Beta 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ephedrine</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Epinephrine</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Norepinephrine</td>
<td>+++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Phenylephrine</td>
<td>+++</td>
<td>Minimal/none</td>
<td>Minimal/none</td>
</tr>
<tr>
<td>Etilefrin</td>
<td>+++</td>
<td>Minimal/none</td>
<td>Minimal/none</td>
</tr>
</tbody>
</table>
Six patients with ischemic priapism (60-240 h)
• Four controls
• No benefit from high dose phenylephrine administration

Muneer et.al J Sex Med 2008;5:2152-2159
When to end intracavernous injection of sympathomimetic agents

- Phenylephrine is less effective in priapism more than 48 hours

AUA Guidelines on Priapism 2003
Broderick GA et.al J Urol 1994;151:259-262
Methylene blue injection

- Antagonist of guanylate cyclase
- 3 trials
  - Hübler et al. (1) → success in 5/5 patients
  - Martinez et al. (2) → success in 22/25 patients
  - deHoll (3) → success in 6/9 patients
- Slighter side effects
  - Penile burning, Blue discoloration for 3 days

* Data limited * Routine use controversial

1- Int Urol Nephrol. 2003;35:519-21
Oral systemic treatment with terbutaline

- β2 adrenergic agonist
- 3 randomised studies
  - Lowe & Jarow → 75 pts (placebo %12, pseudoephedrine 28%, terbutaline 36%)
  - Govier et al. → 24 pts, no benefit over placebo
  - Priyadarshi → 68 pts due to ICI therapy (placebo 15%, terbutaline 42%).
- Dosing: 5 mg / 3 times with 15 min intervals.
- Major drawbacks:
  - Low level of drug in the cavernosal blood
  - Density of β receptor is 10 times less than the α receptors

* Data limited
* It is useless to consume a critical time for preventing necrosis with oral drugs
In cases that persist despite aspiration and intracavernous injection of a sympathomimetic drug, these steps should be repeated several times before considering surgical intervention.

Ischaemic priapism due to sickle cell anaemia is treated in the same fashion as idiopathic ischaemic priapism. Other supportive measures are recommended (intravenous hydration, oxygen administration with alkalinisation with bicarbonates, blood exchange transfusions), but these should not delay initial treatment to the penis.

Surgical treatment is recommended only when blood aspiration and intracavernous injection of sympathomimetic drugs have failed or for priapism events lasting ≤ 72 hours.

Distal shunt surgical procedures should be performed first followed by proximal procedures in case of failure. The efficacy of these procedures is questionable and cavernous biopsy may be considered to diagnose muscle necrosis. No clear recommendation on one type of shunt over another can be given.

In cases of priapism presenting > 36 hours after onset, or in cases for which all interventions have failed, erectile dysfunction is inevitable and the immediate implantation of a penile prosthesis should be discussed with the patient. Implantation of penile prosthesis at a later stage can be difficult due to severe corporeal fibrosis.
Non-ischemic priapism

- Unregulated high flow of cavernous artery to CC.
- No hypoxia or acidosis in blood gass.
- Corpora tumescent but neither rigid nor painful
- Arteriorlar-sinusoidal fistula
- Emergent medical treatment not required.
- Venous outflow is not affected
- Erectile functions are usually preserved.

Burnett AL- Surgical Management of Ischemic Priapism-J Sex Med 2012
Treatment of non-ischemic priapism

- Arterial priapism is not emergency and may be managed conservatively.
- Diagnosis is best made by penile/perineal duplex Doppler ultrasound.
- Angioembolisation represents first-line intervention.
- Where angioembolization fails or is contraindicated surgical ligation is reasonable.
1. Arterial fistula in main cavernosal artery
   1. Androgen blockage + Embolization
2. Arterial fistula in branch of C.A
   1. Embolization
3. Iatrogenic high flow (patent shunt)
4. Post priapism episode high flow
   (no fistula - increased blood flow)
Androgen Blockade for NIP

- It is the first study in high flow priapism
- **Aim**
  - Reduction or elimination of nocturnal penile erections
  - Intracavernous pressure ↓ ↓ ↓
  - Spontaneous closure of cavernous artery fistula may occur
  - To decrease TT levels below threshold value for SRE (100 ng/dl)

Table 2  Traumatic high-flow priapism patients

<table>
<thead>
<tr>
<th>Patients</th>
<th>Age</th>
<th>Etiology</th>
<th>Shunt</th>
<th>Time to presentation (months)</th>
<th>Treatment</th>
<th>Duration</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>Motorcycle accident</td>
<td>None</td>
<td>2</td>
<td>Bicalutamide</td>
<td>3 months</td>
<td>Complete</td>
</tr>
<tr>
<td>2</td>
<td>23</td>
<td>Fall, perineal injury</td>
<td>None</td>
<td>4</td>
<td>Leuprolide/ketoconazole</td>
<td>3 months</td>
<td>Complete</td>
</tr>
<tr>
<td>3</td>
<td>44</td>
<td>Softball strike</td>
<td>None</td>
<td>12</td>
<td>Ketoconazole</td>
<td>1 week</td>
<td>Incomplete</td>
</tr>
</tbody>
</table>

J Sex Med 2010;7:2532–2537

Mwamukonda BK, Lue TF et al, J Sex Med 2010;7:2532-2537
Androgen Blockade for NIP

- A successful option for treating high flow priapism
- Acceptable side effects (decreased libido, fatigue)
- Return to baseline potency on treatment withdrawal in this study

Table 3 Posttreatment high-flow priapism patients

<table>
<thead>
<tr>
<th>Patients</th>
<th>Age</th>
<th>Etiology</th>
<th>Shunt</th>
<th>Time to presentation (months)</th>
<th>Treatment</th>
<th>Duration (months)</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>33</td>
<td>Idiopathic IP treatment</td>
<td>Distal</td>
<td>3</td>
<td>Leuprolide/bicalutamide</td>
<td>3</td>
<td>Complete</td>
</tr>
<tr>
<td>5</td>
<td>47</td>
<td>Cocaine-induced IP treatment</td>
<td>Failed distal, proximal</td>
<td>8</td>
<td>Leuprolide/bicalutamide</td>
<td>2</td>
<td>Complete</td>
</tr>
<tr>
<td>6</td>
<td>60</td>
<td>Spider bite-induced IP treatment</td>
<td>Failed distal, proximal</td>
<td>12</td>
<td>Leuprolide</td>
<td>6</td>
<td>Complete</td>
</tr>
<tr>
<td>7</td>
<td>30</td>
<td>Trazodone-induced IP treatment</td>
<td>Failed distal, proximal</td>
<td>15</td>
<td>Leuprolide</td>
<td>6</td>
<td>Complete</td>
</tr>
</tbody>
</table>

*IP* - ischemic priapism.

Mwamukonda BK, Lue TF et al, J Sex Med 2010;7:2532-2537
Recurrent Intermittent Priapism (RIP)

- Detumescence periods observed between unwanted painful erections.
- Often idiopathic.
- Associated with sickle cell disease in children.
- Patients experiencing ischemic priapism are also at risk for stuttering priapsim

Serjeant GR, de Ceulaer K, Maude GH. Lancet 1985;2:1274–6
Recurrent Priapism

- Etiology is often idiopathic\(^1\)
- SCD patients are more prone to developing recurrent priapism\(^1\)
- 35% of males with SCD will have priapistic episode \(^2\)

1-AUA Guidelines on Priapism 2003
2- Adeyoju et al. BJU Int 2002;90:898-902
RIP and ED

**SCD**
- N=40
- 100% African American
- Mean Age = 19.5 yrs
- RIP duration= 9.2 yrs
- ED (IIEF-5<22)= 48%

**Non SCD**
- N=19
- 37% African American
- 29.1 yrs
- 4.6 yrs
- 21%

- Overall ED rate in RIP is 39%
- Patients with SCD had ED rate x2
- Patient with SCD and RIP had ED 4.7 times the non SCD patients
- Frequency and episode duration is associated with ED

Anele UA, Burnett AL
Priapism in SCD: Not only vaso-occlusion

- Priapism in sickle cell disease is associated with impaired NO bioavailability.
Treatment of recurrent priapism I

Objective of the treatment:

• Specific treatment for ischemic priapism episodes
• Establish measures for prevention
• Many oral drugs were used.
• Terbutaline, digoxin, antiandrogens, gabapentine, PDE5 inhibitors more promising.
<table>
<thead>
<tr>
<th>Treatment (class, drug, and dosage)</th>
<th>Putative mechanism of action</th>
<th>Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adrenergic system effectors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral $\alpha$-adrenergic agonist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudoephedrine 60 mg po q6h $^{1,2}$</td>
<td></td>
<td>Unlikely</td>
</tr>
<tr>
<td>Etilefrine 50–100 mg po qd $^{2,3}$</td>
<td></td>
<td>Unlikely</td>
</tr>
<tr>
<td>Oral $\beta$-adrenergic agonist</td>
<td></td>
<td>Unlikely</td>
</tr>
<tr>
<td>Terbutaline 5–10 mg po qd $^4$</td>
<td><strong>Intracavernosal $\alpha$-adrenergic agonist</strong></td>
<td>Likely</td>
</tr>
<tr>
<td>Phenylephrine 100–500 mcg prn $^5$</td>
<td></td>
<td>Likely</td>
</tr>
<tr>
<td>Etilefrine 5–10 mg pm $^6,7$</td>
<td></td>
<td>Likely</td>
</tr>
<tr>
<td><strong>Hormonal analogues</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gonadotropin-releasing hormone agonist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leuprolide acetate 7.5 mg IM $^8$</td>
<td></td>
<td>Likely</td>
</tr>
<tr>
<td>Androgen receptor antagonist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicalutamide 50 mg po qd $^9$</td>
<td></td>
<td>Likely</td>
</tr>
<tr>
<td>Ketoconazole 200 mg po bid/tid $^{10}$</td>
<td></td>
<td>Likely</td>
</tr>
<tr>
<td>Estrogen receptor agonist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stilboestrol 5 mg po qd $^{11}$</td>
<td></td>
<td>Likely</td>
</tr>
<tr>
<td>5$\alpha$-reductase inhibitor</td>
<td></td>
<td>Likely</td>
</tr>
<tr>
<td>Finasteride 1–5 mg po qd $^{12}$</td>
<td></td>
<td>Likely</td>
</tr>
<tr>
<td><strong>Nitric system effectors</strong></td>
<td><strong>Modulation of erection control mechanisms</strong></td>
<td></td>
</tr>
<tr>
<td>PDE5 inhibitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sildenafil 25 mg po qam, w/o sex stimulation $^{13}$</td>
<td></td>
<td>Likely</td>
</tr>
<tr>
<td>Tadalafil 5 mg po qam, w/o sex stimulation $^{13}$</td>
<td></td>
<td>Likely</td>
</tr>
<tr>
<td><strong>Smooth muscle regulators</strong></td>
<td><strong>Promotion of cavernosal contractility/ vasoconstriction</strong></td>
<td></td>
</tr>
<tr>
<td>Na-K-ATPase inhibitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digoxin 0.25–0.5 mg po qd $^{14}$</td>
<td></td>
<td>Likely</td>
</tr>
</tbody>
</table>
Treatment of recurrent priapism II

- **Digoxin**: 9/13 (69%) success.
- Requires continuous serum level measurement, not feasible
- **Finasteride**: Filho et al. → 23/23 success with 3 mg/d.
  - Associated with reduced libido and ED.
  - Contraindicated for children and for individuals trying to conceive.
- **Gabapentine**: Perimenis et al. → 3/3 success.
- **Terbutaline**: limited success for IP episodes
- **Etilefrine**: Okpala et al. → 13/18 (72%) with 100 mg
Treatment of recurrent priapism III

- **DES (diethylstilbestrol)**
  - 100% success at stopping episodes
  - 50% recurrence after treatment cessation
- **Antiandrogens**
  - flutamide, biculatamide, chormadinone
- **Ketoconazole**
• **Ketoconazole** treatment protocol

• Priapism patients with recurrent episodes n=17

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Ketoconazole

- No emergency interventions required for patients during treatment period
- **Daily episodes completely improved in 16 pts**
- 1 pt quit the treatment because of nausea at day 4
- Treatment efficient immediately
- No erection problem in any patient

PDE5 inhibitors in Stuttering Priapism

• Rational: The working theory is that exaggerated rise of cGMP because of downregulated levels of PDE type 5;

2-Burnett et.al J Sex Med 2006;3:1077-1084
Randomized Controlled Trial of Sildenafil for Preventing Recurrent Ischemic Priapism in Sickle Cell Disease

Arthur L. Burnett, MD, MBA, a Uzoma A. Anele, MD, a Irene N. Trueheart, RN, a John J. Strouse, MD, PhD, b James F. Casella, MD b

aThe James Buchanan Brady Urological Institute and Department of Urology, The Johns Hopkins School of Medicine, Baltimore, Md; bDivision of Pediatric Hematology, Department of Pediatrics, Johns Hopkins University School of Medicine, Baltimore, Md.

- n:13 RIP,
- n:7 Sildenafil 50 mg daily
- n:6 placebo, 8 week follow up

-Priapism episodes decreased by 50% in 67% of pts using daily 50 mg sildenafil (pts group 14-15 yrs old, 2 prior priapism attacks)
-No statistical significance between placebo and sildenafil at blind-phase

<table>
<thead>
<tr>
<th></th>
<th>no. (%)</th>
<th>P Value</th>
<th>no. (%)</th>
<th>P Value</th>
<th>no. (%)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>End of Double-Blind Phase</td>
<td>Placebo group (n = 4)</td>
<td>2 (50.0)</td>
<td>1.00</td>
<td>2 (50.0)</td>
<td>.43</td>
<td>1 (25.0)</td>
</tr>
<tr>
<td></td>
<td>Sildenafil group (n = 3)</td>
<td>1 (33.3)</td>
<td></td>
<td>0 (0.0)</td>
<td></td>
<td>1 (33.3)</td>
</tr>
<tr>
<td>End of Open-Label Phase</td>
<td>All (n = 3)</td>
<td>2 (66.7)</td>
<td></td>
<td>1 (33.3)</td>
<td></td>
<td>1 (33.3)</td>
</tr>
</tbody>
</table>
# EAU recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>GR</th>
</tr>
</thead>
<tbody>
<tr>
<td>The primary goal in the management of patients with stuttering priapism is the prevention of future episodes, which can generally be achieved pharmacologically. The management of each acute episode is similar to that for ischaemic priapism.</td>
<td>B</td>
</tr>
<tr>
<td>Hormonal therapies (mainly gonadotropin receptor hormone agonists or antagonists) and/or antiandrogens may be used for the prevention of future episodes. They should not be used before sexual maturation is reached.</td>
<td>C</td>
</tr>
<tr>
<td>Phosphodiesterase type 5 inhibitors have a paradoxical effect in alleviating and preventing stuttering priapism, mainly in patients with idiopathic and sickle cell disease–associated priapism. Treatment should be initiated only when the penis is in its flaccid state.</td>
<td>C</td>
</tr>
<tr>
<td>Other systemic drugs (digoxin, α-adrenergic agonists, baclofen, gabapentin, terbutaline) can be considered, but data are even more limited.</td>
<td>C</td>
</tr>
<tr>
<td>Intracavernosal self-injections at home of sympathomimetic drugs can be considered for the treatment of acute episodes on an interim basis until ischaemic priapism has been alleviated.</td>
<td>C</td>
</tr>
</tbody>
</table>

GR = grade of recommendation.
Results

• Low flow priapism is an urgent condition, time is erectile tissue, and timely treatment is crucial and must be treated as medically/surgically. ED is imperious, If it has not been treated.

• First-line therapy for patients with episodes of acute ischemic priapism is aspiration of blood with irrigation of the corpora cavernosa, in combination with intracavernous α-agonist injection therapy (phenylephrine, etilefrin, metilen blue, Adrenalin (Epinephrine), Metaraminol, Terbutaline) For anesthetic purposes, a preceding dorsal nerve block or local penile shaft block is usually performed.

• High flow priapism is not emergency and may be managed conservatively with medical treatment such as androgen blockade agents as well as embolization.

• Stuttaring priapism a form of LFP and treatable with medical treatment of LFP as well as terbutaline, digoxin, antiandrogens, Gabapentin, PDE5-I