ORIGINAL ARTICLE

Ischemic priapism in South-East Nigeria: Presentation, management challenges, and aftermath issues

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Abstract

Context: Ischemic priapism is the more common variety of priapism and often presents late. Outcome is largely dependent on the duration of ischemia.

Aims: To determine the etiology, presentation, management, and outcome of ischemic priapism.

Settings and Design: Retrospective analysis of consecutive cases presenting to three hospitals offering specialist urological services in South-East Nigeria from January 2000 to December 2010.

Patients and Methods: Fifteen patients were assessed for clinical data and outcome.

Statistical Analysis Used: The data were analyzed descriptively and inferentially using Statistical Package for Social Sciences (SPSS version 16, SPSS Inc., Chicago IL, USA) with $P < 0.05$.

Results: Mean age was 30.5 years (standard deviation [SD] =1.63), range: 14–79 years. Onset to presentation interval ranged from 6 h to 28 days. Eight patients (53.3%) had sickle cell disease (SCD). Four patients (26.7%) had unidentified causes. The 8 SCD patients had stuttering priapism on several occasions previously. Six patients (40%) had taken oral herbal medications as treatment prior to presentation. Initial resuscitative measures were intravenous hydration, aspiration, and irrigation with normal saline in 13 patients. Glanulo-cavernous shunt (Al-Ghorab) was performed in all the patients. Detumescence was immediate in 14 and delayed in 1 patient. Three patients had transient recurrence of tumescence, while one had to be reshunted. Erectile dysfunction (ED) occurred in 7 patients (46.7%). Occurrence of ED increased significantly in patients presenting 24 h after onset of symptoms ([$P = 0.032$] Fishers exact test). Mean duration of follow-up was 21.9 weeks (SD = 4.1), range: 3–156 weeks.

Conclusions: Low flow priapism is common in our environment, and approximately half will occur in SCD patients who have had stuttering priapism previously. Timely diagnosis and treatment will reduce the probability of severe ED. In our experience, the Al-Ghorab shunt provides rapid relief. Enlightenment is vital in reducing ischemia time. Emphasis on preventive measures in SCD patients is vital.

Key words: Ischemic priapism, low flow, nonischemic priapism, stuttering priapism

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Introduction

Priapism is defined as a persistent penile erection that continues for >4 h beyond or is unrelated to sexual stimulation.[1,2] This condition has three varieties; ischemic, nonischemic, and recurrent ischemic (stuttering) priapism.[2]

The ischemic variety is due to venous obstruction. This results in painful hypoxia and is a urological emergency.[1,2] In the nonischemic type, trauma results in an arteriovenous fistula between the cavernous artery and lacunar spaces, which bypasses the high resistance helicine arteries,[3] leading to a persistent erection with good oxygenation.[4,5]

Ischemic priapism, the more common type, has an incidence of between 0.3 and 1.5/100,000 men/year.[6]

In Nigeria, sickle cell disease (SCD) accounts for a large proportion of cases,[7,8] while the use of intracavernosal injection (ICI) of vasoactive substances accounts for many cases in Western climes.[9]

Previous studies show that in developing countries late presentation occasioned by ignorance, patronage of faith healers, and herbalists is the norm.[7,8] Other possible contributory factors may be physician ignorance and weaknesses in the referral system.[8] These factors probably act in synergy to worsen outcome.

This study sought to determine the etiology, presentation, management, and treatment outcomes for ischemic priapism in our environment. This would provide a basis for comparison with previous studies to determine any changes in disease profile that may have occurred over time. Findings may also help the development of local management protocols that reflect the peculiar challenges that are encountered locally.

Patients and Methods

Between January 2000 and December 2010, 27 patients managed for priapism at three hospitals in South-East Nigeria were identified through search of admission and theater registers. Of these, 15 case notes with complete records were retrieved and evaluated using a proforma.

Table 1: Clinicopathologic characteristics

Age	Type of Priapism	Duration Priapism	Procedures Before presentation	Procedure	Alternative/ herbal treatment	Erectile dysfunction	Degree of erectile dysfunction	<24 h	>24 h
14	Ischemic	19 h	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt	No	No	N/A	Yes	Nil
15	Ischemic	3 days	IV fluid	Al-Ghorab shunt	No	No	N/A	Nil	Yes
32	Ischemic	9 days	IV fluid	Al-Ghorab shunt	Yes	Yes	Absent	Nil	Yes
28	Ischemic	8 h	IV fluid Aspiration + saline irrigation + adrenaline	Al-Ghorab shunt	No	Yes	Poor	Yes	Nil
79	Ischemic	28 days	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt + bilateral orchidectomy	Yes	Yes	Absent	Nil	Yes
22	Ischemic	6 h	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt	No	No	N/A	Yes	Nil
54	Ischemic	8 days	IV fluid	Al-Ghorab shunt	No	Yes	Absent	Nil	Yes
30	Ischemic	37 h	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt	No	No	N/A	Nil	Yes
24	Ischemic	20 h	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt	Yes	No	N/A	Yes	Nil
20	Ischemic	11 h	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt	Yes	No	N/A	Yes	Nil
32	Ischemic	40 h	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt	No	Yes	Poor	Nil	Yes
23	Ischemic	21 h	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt	No	No	N/A	Yes	Nil
31	Ischemic	22 h	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt	Yes	No	N/A	Yes	Nil
26	Ischemic	42 h	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt	Yes	Yes	Absent	Nil	Yes
28	Ischemic	72 h	IV fluid Aspiration + saline irrigation	Al-Ghorab shunt	No	Yes	Absent	Nil	Yes

N/A=Not Not applicable; IV=Intravenous

Information retrieved included biodata, clinical features, onset to presentation interval, and type of priapism.

Others were investigations performed, nonoperative care, operative details, prior use of herbs/alternative therapy, complications observed, and duration of follow-up.

Research Ethics Committee approval was obtained. The data were analyzed descriptively and inferentially using Statistical Package for Social Sciences (SPSS version 16, SPSS Inc. Chicago IL, USA) with $P < 0.05$.

Results

In the study period, 27 patients were seen, but 12 had missing or incomplete records and were excluded leaving 15 evaluable patients. Mean age was 30.5 years (standard deviation [SD] = 1.63), range: 14–79 years. Ten patients (66.7%) were under 30-year-old. Nine patients (60%) were students, 5 (33.3%) were workers, and 1 patient (6.7%) was retired.

All had ischemic priapism presenting with persistent painful penile erections of durations ranging from 6 h to 28 days [Table 1]. Regarding comorbidity, 8 patients (53.3%) had SCD, 1 (6.7%) each had psychiatric disorder and was on treatment with thioridazine, postappendectomy, and carcinoma of the prostate. Four patients (26.7%) had unidentified causes. The 8 SCD patients all had stuttering priapism previously.

Table 2: Onset - Presentation interval

Time	Number of patients	Percentage
<6 h	0	0
6-12 h	3 patients	20
12-24 h	4 patients	26.6
24-48 h	3 patients	20
3 days	2 patients	13.3
8 days	1 patient	6.7
9 days	1 patient	6.7
28 days	1 patient	6.7

Six patients (40%) had taken oral herbal medications before presentation. Initial resuscitation consisted of intravenous fluid and aspiration/irrigation with normal saline in 13 patients. Aspiration and irrigation were carried out on the lateral mid-shaft of the penis at 3 o'clock or 9 o'clock using a 19 gauge butterfly needle. Aspiration is then done with a 10 or 20 ml syringe with intermittent injection of normal saline. At conclusion of the procedure, the puncture site is compressed for up to 2 min to reduce hematoma formation. One patient had ICI of dilute adrenaline in addition to aspiration/irrigation.

Glanulo-cavernous shunt (Al-Ghorab) was performed in all the patients. After adequate anesthesia and skin preparation and draping, a transverse incision on the dorsum of the glans penis about 2 cm distal to the corona is carried down to the distal end of the corpus cavernosum. A circular corporotomy is done excising a small disc of tunica albuginea and cavernous tissue deep to it. Dark viscid blood is then expressed until red cavernosal arterial blood is seen and detumescence occurs.

Detumescence was immediate in 14 and delayed in 1 patient. Three patients had recurrence of tumescence that responded to manual expression of blood from the shunt site, while one had shunt revision.

Onset to presentation interval was 6 h to 28 days, with only 20% of patients presenting within 12 h of onset of priapism. Erectile dysfunction (ED), defined in this study as persistently poor or absent erections commencing after the episode of priapism which was self-reported or noted on follow-up questioning, was noted in 7 patients (46.7%). Occurrence of ED increased significantly in patients presenting 24 h after onset of symptoms ([$P = 0.032$] Fishers exact test).

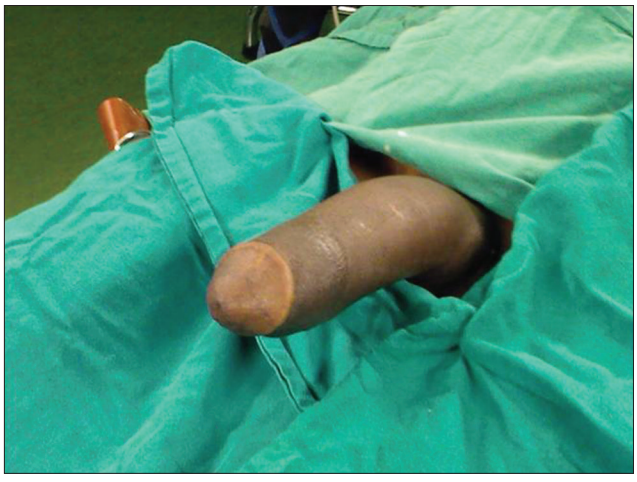

Figure 1: Priapismic penis: Immediate preoperatively

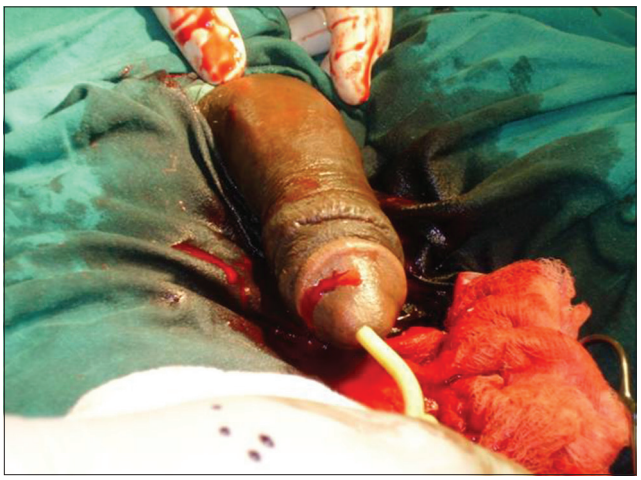

Figure 2: Postshunt photograph: Note detumescence after evacuating sludge via shunt site

Mean duration of follow-up was 21.9 weeks (SD = 4.1), range: 3–156 weeks.

Discussion

All patients presented with ischemic priapism. This is similar to earlier findings,[7,8] this trend was noted to be associated with SCD disease.[10]

Fifty-three percent (53.3%) of patients in this study had SCD and was similar to the findings of other workers in sub-Saharan Africa, ranging from 20% to 91%.[7,8,11] All the SCD patients had a history of stuttering priapism. History also showed poor compliance with SCD clinic visits and routine drugs.

Mean age was 30.5 years (SD = 1.63), which is similar to the previous findings.[8,9] This is in sharp contrast to the findings of Earle *et al*.,[9] who noted a mean age of 52 years in Australia where the majority of patients developed priapism after ICIs for ED. No patient in our series had ICI as a cause and this probably reflects the low usage of these agents in our environment.

Other etiologies observed were the use of antipsychotic medication (thioridazine) in 1 patient. This had been noted by Earle *et al*.[9] in Australia, the mechanism being its alpha-adrenergic blocking properties on the corpora cavernosa, which inhibit the sympathetic impulses for detumescence.[12]

Care should be taken in administering such agents, especially when used in combination with lithium or selective serotonin reuptake inhibitors.[13] Other known etiologies include chronic myeloid leukemia[14] and neurological disorders,[15] but these were not seen in this study.

Carcinoma of the prostate was noted as a cause in one patient and this had been reported by other workers from Africa, Asia, and Europe.[16-18] This usually results secondary to metastatic obstruction within the corpora cavernosa.[18] This patient had bilateral orchidectomy in addition to shunting.

One patient developed postappendectomy priapism and this has been observed by others.[19] Proposed etiology is thought to be due to thrombotic obstruction of venous outflow.[19]

In 4 patients (26.45%), no etiology could be identified.

Onset to presentation interval was noted in our series to be 6 h to 28 days (mean 96.7 h), with only 20% of patients presenting within the 1st 12 h and none presenting earlier than 6 h [Table 2].

Generally, all patients presented late and this has been noted elsewhere.[7,8,11] Reasons adduced for this late presentation include embarrassment, poverty, ignorance of health personnel on the need for early referral, and patronage of faith healers who often delay presentation to hospital.[7,8]

In this study, 40% of our patients had previously presented to traditional herbalists and alternative practitioners and received medication and only presented to the hospital when these measures failed. Similar pattern of health-seeking behavior has been observed in other developing countries.[20]

This delay in presentation in low flow priapism is thought to worsen the prognosis and is probably contributory to the high complication rate observed and requires consistent public enlightenment to reduce its occurrence.

Diagnosis was made clinically in all cases, and was based on history of persistent painful penile erection and aspiration of dark viscid blood from the corpora cavernosa.[21]

Current guidelines for the management of ischemic priapism recommend initial corporeal aspiration and injection of sympathomimetics.[22] In the cases of ischemic priapism of SCD origin, hydration, oxygenation, and systemic alkalinization can be done. When conservative management fails or where presentation occurs later, the surgical options are to be considered. They include a variety of shunts among the corpus cavernosum to the glans penis, proximal corpus spongiosum, or the saphenous vein. These serve to provide an alternative drainage route for the obstructed venous mechanism. Caverno-glandular shunt of Al-Ghorab was used in all our patients and resulted in immediate detumescence in all the cases [Figures 1 and 2]. This is similar to the findings of others,[7,8,23] who noted similar results.

Detumescence was immediate in all patients. Three patients had recurrence of tumescence and all were instructed to squeeze the penis intermittently to manually express blood from the shunt fistula site. This resulted in resolution in 2 cases with 1 reshunted. This phenomenon of rebound tumescence has been observed in other studies.[8,23] Intermittent squeezing of the penis is recommended to ensure shunt patency and prevent recurrence of priapism.[24]

Aspiration and irrigation with normal saline were done in 13 cases. These measures failed to resolve the priapism episode in all attempted cases. A single patient, in addition, received intracavernous injection of adrenaline, which was discontinued later on due to systemic side effects.

Local application of ice pack was used in one patient unsuccessfully. It has been reported that this may worsen the stasis by inducing vasoconstriction in the cavernous tissue and is not useful in ischemic priapism.[7]

The principal complication seen was ED in 7 patients (46.6%). Occurrence of ED increased significantly

in patients presenting 24 h after onset of symptoms ([$P = 0.032$] Fishers exact test).

Given that irreversible corporal damage ensues after 6 h of ischemia,[25] it is not surprising that a larger proportion of ED was seen in those presenting later.

With an associated risk of ED of 35–44%,[2,7,11,26] and the grave psychosocial impact if severe, it is essential that early diagnosis and correct treatment has to be carried out.

Five patients (33.3%) had severe ED unresponsive to PDE5 inhibitors. This leaves penile prosthesis insertion as the only remedy to facilitate penetrative sexual intercourse. This has been advocated by other workers in an acute setting before the onset of dense fibrosis that makes insertion difficult and may result in loss of penile length.[26,27]

Previous studies have recommended an adequate follow-up period as about 58 weeks.[24] Duration of follow-up was 21 weeks (SD = 4.1). We believe that this observed period may be suboptimal in assessing the full range of delayed sequelae of this condition.

Limitations of this study include its retrospective nature, the challenge of medical records storage, and retrieval that led to the exclusion of 8 patients with absent or incomplete charts. Relatively short mean duration of follow-up was also noted.

Conclusion

Low-flow priapism is common in our environment, and approximately half will occur in SCD patients who have had stuttering priapism previously. Irrespective of the predisposing cause, rapid diagnosis and treatment will probably reduce the probability of severe ED. Distal shunting using the Al-Ghorab technique results in rapid detumescence in most cases. Public enlightenment is desired in reducing the prolonged ischemia times seen as a result of delayed presentation. Reemphasizing the need for sustained care for SCD patients with observation of preventive measures would be useful. Further study of this condition of a prospective nature is recommended.

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Conflicts of interest
There are no conflicts of interest.

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