Research Article / Araştırma Makalesi

Treatment of Priapism: A Single Center Experience

Priapizm Tedavisi: Tek Merkez Sonuçları

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Abstract

Background: The aim of this study was to evaluate patients in our region who applied to the emergency department or urology outpatient clinic due to priapism, regarding the parameters such as the duration of priapism, treatment, age, and treatment outcomes.
Materials and Methods: Thirty-nine male patients who presented with priapism between January 2010 and May 2018 were included in the study. We reviewed all data in patients' files and recorded patients' data including age, date of first episode of priapism, duration as well as the clinical coarse of priapism, presence of accompanying conditions associated with priapism, history of intracavernosal injections use, administration of intracavernosal injections (self-administration or by a doctor), treatment method and outcomes
Results: A total of 43 episodes of priapism were recorded in 39 patients. The mean age of the patients was 46.6 (27-70) years. It was observed that priapism developed following intracavernosal injections use in all patients. In 9 (23%) patients (10 episodes), priapism developed after intracavernosal injection, which was used for treatment due to erectile dysfunction and in 30 (77%) (33 episodes) patients following penile Doppler ultrasound with intracavernosal injections. 30 patients (32 episodes) were successfully treated with drainage only, while 9 patients (11 episodes) required drainage + sympathomimetic therapy, and two of these had distal shunt due to persistent priapism.
Conclusions: Drainage is enough in the majority of priapism patients. However, drainage is not sufficient with the prolongation of the patient application period. In this regard, patients should be informed about potential risks before starting an ICI therapy.

Key Words: Priapism, Urological emergency, Papaverine, Pain

Öz.

Amaç: Bu çalışmada amacımız bölgemizde priapizm nedeniyle acil servise veya üroloji kliniğine başvuran hastaların priapizm süresi, uygulanan tedavi, hastaların yaşı ve tedavi sonuçlarını değerlendirmektir.
Materyal ve Metod: Ocak 2010 ile Mayıs 2018 tarihleri arasında priapizm nedeniyle başvuran 39 hasta çalışmaya dahil edildi. Tüm hastaların yaşı, priapizm tarihi, klinik öyküsü, priapizm nedenleri, intrakavernoz ilaç kullanımı, hastaneye başvuru süresi priapizm için yapılan tedavi ve sonuçları hasta dosyasından alındı.
Bulgular: Toplam 39 hastada 43 priapizm epizodu görüldü. Hastaların yaş ortalaması 46,6 (27-70) yıl olarak tespit edildi. Hastaların tamamında intrakavernozal enjeksiyon kullanımı sonrasında priapizm geliştiği görüldü. Hastalar ortalama 22,6 (6-92) saat sonra tedavi için başvurduğu görüldü. Hastaların 9 (%23)'unda (10 epizod) erektil disfonksiyon şikayeti nedeniyle tedavi amaçlı kullanılan intrakavernozal enjeksiyon sonrası priapizm gelişti. 30 (%77) hasta da (33 epizod) ise penil dopler ultrason için yapılan intrakavernozal enjeksiyon sonrasında priapizm gelişti. 30 hasta (33 epizod) sadece drenaj ile tedaviden fayda görürken, 6 hastaya (9 epizod) drenaj+sempatomimetik uygulandı. Bu hastalardan ikisine priapizmin devam etmesi nedeniyle distal şant uygulanmıştır.
Sonuç: Priapizm hastalarının çoğunluğunda drenaj yeterli olmaktadır. Ancak hasta başvuru süresinin uzaması ile drenaj yeterli olmamaktadır. Bu nedenle hastalar priapizm konusunda bilgilendirilmeli ve olası sonuçları paylaşılmalıdır.

Anahtar kelimeler: Priapizm, Ürolojik Acil, Papaverin, Ağrı.

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Geliş tarihi / Received:
12.08.2020

Kabul tarihi / Accepted:
16.11.2020

DOI: 10.35440/hutfd.763668

Introduction

Priapism is an uncommon pathology that can be defined as full or partial penile tumescence lasting longer than 4 hours (1,2). There are three different types of priapism: ischemic (veno-occlusive, low-flow), non-ischemic (arterial, high-flow) and stuttering. (recurrent). The pathophysiological causes and treatment options differ for each type of priapism. Actual incidence and prevalence of priapism is not precisely known, however, it was given in some epidemiological studies as 0.3-1.0/100,000 males per year (3). It is more common in the age range of 5-10 years and 20-50 years (4).

With the introduction of ICI therapy for the treatment of ED, priapism was determined to appear as a side effect with an incidence of 0.5% per ICI injection. ICI of papaverine can cause priapism at an incidence of 3–12% (5). Most cases of priapism have idiopathic and iatrogenic etiologies, although potential causes differentiate by the type of priapism. Since PDUS is performed with ICI, the number of cases with priapism cases showed an increase in recent years (6). The aim of this study was to evaluate patients in our region who applied to the emergency department or urology outpatient clinic with the complaint of priapism, regarding various relevant parameters such as duration of priapism, treatment, age, and treatment outcomes.

Materials and Methods

A total of 39 male patients who presented with priapism between January 2010 and May 2018 in our hospital were evaluated. After obtaining the approval of the Ethics Committee (Clinic Ethical Committee of the Harran University (Date: 13.04.2020 decision number 07/03), we reviewed all data in patients' files, and recorded patients' data including age, date of first episode of priapism, duration of priapism, clinical coarse of priapism, presence of accompanying conditions associated with priapism, history of intracavernosal injections (ICI) use, administration of ICI (self-administration or by a doctor), treatment method and outcomes. In order to identify the type of priapism, corporal blood gas sampling was performed in all patients. Patients were divided into two groups as cavernosal drainage, cavernosal drainage + sympathomimetic and distal shunt according to priapism treatment method. For corporal aspiration, the transcavernosal 14 or 16 Gauge needle was placed on the side of the proximal penile shaft. Bilateral drainage was performed to patients who did not have adequate detumescence

Blood was taken and drained from the corpus cavernosum, followed by monitoring in required patients with saline in adrenaline (200 200g / mL) irrigation and administered intermittently at a dose of 1.0 mL every 3-5 min up to a maximum dosage of 1 mg. The Shunt procedure was applied to the glans penis by the Tru-cut biopsy needle from the side of the meatus under local anesthesia until the distal corpus cavernosum was applied.

IBM SPSS (Statistical Package for Social Sciences, Chicago, IL) v20 program was used for statistical analysis. central tendency and dispersion measures such as number, percentage, mean standart deviation were used for establishing descriptive statics.

Results

A total of 39 patients within the 8 year period between 2010–2018. The mean age of the patients was 46.6 (27-70) years. In all patients, priapism was found to develop after ICI use and patients applied for treatment within a period of 22.6 (6-92) hours, at average. Four patients developed priapism due to ICI which was used at different times. Nine (23%) patients (ten episodes of priapism) developed priapism after ICI treatment due to ED. Papaverine use doses of patients could not be reached. Thirty (77%) (thirty three episodes of priapism) patients developed priapism because PDUS was performed with ICI. For PDUS, usually 50 mg papaverine is administered in our clinic. Thirty (thirty two episodes) patients were treated with drainage only, while nine (eleven episodes) patients with drainage + sympathomimetic therapy. In two of these nine patients who needed additional sympathomimetic therapy, distal shunt (winter distal shunt) was also performed because of continuing priapism (18 and 22 hours). In 15 patients, drainage from unilateral corpora cavernosa provided detumescence and contralateral drainage was not required. An average of 194 (70-300) cc of blood was drained out from the corpora cavernosa in all patients (Table 1).

Table 1. Demographic and descriptive features

Number of patients (n)	39
Priapism episodes (n)	43
Mean age (years)	46.6 (27-70)
Mean duration of priapism (hours)	22.6 (6-92)
Penile Doppler ultrasound (papaverin) (n)	30
treatment due to erectile dysfunction (papaverin) (n)	9
Irrigation / Drainage (n)	30
Irrigation / Drainage + Sympathomimetic (n)	9
Distal shunt surgery (n)	2

Discussion

Although most cases of priapism are idiopathic in general, most cases in the United States are iatrogenic, due to the use of ICI for the diagnosis and treatment of ED (7). Besides these, there are many etiological factors leading to priapism. ICI therapy for ED, along with the use of papaverine in particular, was determined to be the most common cause of priapism episodes as a result of our 8 years of investigation.

Younger men with better baseline erectile function, or men

having a psychogenic or neurogenic cause for ED were considered to have a higher risk of priapism due to using ICI therapy (8,9). The results of our study was similar and the mean age was 46.6 (27-70) years.

Among three types of priapism, ischemic priapism is the most common. If not treated, it is characterized by tissue necrosis and irreversible tissue damage, leading to cavernosal fibrosis and ultimately, ED. Therefore, ischemic priapism, representing a compartment syndrome seems to be an urologic emergency. In accordance with the literature, all of our cases were ischemic priapism which developed due to ICI application.

Yenice et al. In their study, it has been shown that the response to treatment decreases with the duration of priapism and the need for additional treatments. In addition, priapism cases were shown to be more resistant at early ages (9,10). In our study, it was seen that only drainage was insufficient in early ages and additional treatments were required. In addition, as the duration of priapism prolongs, only drainage remains insufficient.

Physical examination and comprehensive clinical history are critical issues in differential diagnosis of priapism types. When taking medical history, duration of priapism, duration of pain, accompanying hematological diseases, drugs used and trauma history should be questioned in particular. In ischemic priapism, pain typically occurs since the very beginning of erection, and the corpus cavernosum is stiff and painful on physical examination, but the corpus spongiosum and glans penis are less affected or unaffected (9). In our series, pain was present from the beginning in all ischemic priapism patients Despite such a painful situation, patients sometimes act hesitantly or negligently and fail to consult a physician immediately, either because they are unaware of the seriousness of the disorder and assume that it may resolve spontaneously or because they feel embarrassed about the situation. In a study, the mean duration of admission to the emergency department for priapism was 25.9 hours (10). It was 22.6 hours in our series, which was in accordance with the literature, although slightly lower. Patients who will be treated by ICI therapy due to ED or PDUS should be informed about the risk of priapism and the importance of early admission to the hospital should be emphasized.

Laboratory tests and radiological examinations can be used in diagnosis. Ischemic priapism is the most common type and seen at the rate of 95%, having partial oxygen pressure below 30 mmHg and partial carbon dioxide pressure above 60 mmHg in the blood gas obtained from the corpus cavernosum. Also, color of blood taken by corporal aspiration is dark red in ischemic priapism and light red in non-ischemic priapism (1). In addition to laboratory tests, penile and perineal doppler ultrasonography can be used to confirm the diagnosis. In PDUS, cavernosal arterial blood flow is either not present or very little in ischemic priapism while it is present in non-ischemic priapism (11). MRI is another imaging modality used in the diagnosis. MRI reveals malignant conditions and possible thrombosis successfully. The role of MRI in the diagnostic evaluation of priapism is controversial. May help in ischemic cases priapism to assess the viability of the corpora cavernosa and the presence of penile fibrosis. In a study of 38 patients with ischemic priapism, sensitivity of MRI to predict nonviable smooth muscle it was 100% as confirmed by corporal biopsy (12). However, high cost and limited accessibility limits its use. In our series, corporal blood gas analysis was used to determine the priapism type in all patients and blood gas results were found to be compatible with ischemic values.

Priapism was associated with abnormal hematological states, such as thrombosis and hyperviscosity (13) and particularly with sickle cell disease (14). Anticoagulants used for treatment of thrombosis were also reported to cause priapism. Heparin may cause abnormal platelet aggregation during the therapy or sometimes after the cessation of therapy, thus it is held responsible for playing a role in the development of priapism (15-18). In our series, priapism due to hematological disorders was not determined in any of the patients.

Brindley (19) described the standard medical treatment of priapism in 1984 in terms of using sympathomimetic drugs, either by aspirating blood from the corpora cavernosa or not. Lue et al (20) reported that aspirating blood up to 60 ml from the corpora cavernosa without using sympathomimetic agents may be a safer way to achieve detumescence. Phenylephrine was reported to be another option that can be used safely in doctor's office setting, and even by self-administration (21). Methylene blue, a guanylate cyclase inhibitor was noted to be a useful agent, by some authors (22). Nevertheless, drainage alone was sufficient in our series, to manage 30 patients (32 episodes) appropriately. Nine patients (11 episodes) were treated with drainage + phenylephrine. Detumescence could not be provided in two of these patients and distal penile shunt (winter) was applied. In our series, detumescence was achieved after drainage of about 194 cc blood at average and unilateral drainage was sufficient in 15 patients.

Our study has a number of limiting factors, such as retrospective design, lack of long term results and lack of etiological factors causing priapism other than ICI use. Despite all these limitations, we think that it will contribute to the literature with the information provided on the type of the priapism in our region as well as its etiology and treatment.

Conclusion

Priapism is a rare condition, primarily occurring as a side effect of ICI. In most cases of priapism due to ICI use. In cases of delayed presentation, cavernosal drainage may

become less effective and surgical shunting may be more likely required. Informing patients before starting ICI treatment about the potential risk of developing priapism would be the most reasonable preventive measure. In case of priapism the patient should very well know that urgent admission is required, then fortunately early medical therapy is usually problem solving.

Ethical Approval: Ethics committee approval was obtained from the Clinic Ethical Committee of the Harran University (Date: 13.04.2020 decision number 07/03).

References

1. Broderick GA, Kadioglu A, Bivalacqua TJ, Ghanem H, Nehra A, Shamloul R. Priapism: pathogenesis, epidemiology, and management . J Sex Med 2010;7:476-500.
2. Burnett AL, Bivalacqua TJ. Priapism: new concepts in medical and surgical management . U rol Clin North Am 2011;38:185-94.
3. Shigehara K, Namiki M. Clinical management of priapism: a review. World J Mens Health 2016;34:1-8.
4. Cherian J, Rao AR, Thwaini A, Kapasi F, Shergill IS, Samman R. Medical and surgical management of priapism. Postgrad Med J 2006;82:89-94.
5. Porst H. The rationale for prostaglandin E1 in erectile failure: a survey of worldwide experience. J Urol 1996;155:802-15.
6. Habous M, Elkhouly M, Abdelwahab O, et al. Noninvasive treatments for iatrogenic priapism: Do they really work? A prospective multicenter study. Urol Ann 2016;8:193-6.
7. Kızılay F, Karamazak S, Semerci B. Priapism and penis fracture from andrologic emergencies. Androloji Bülteni 2016;18:83-91.
8. Lomas GM, Jarow JP. Risk factors for papaverine-induced priapism. J Urol 1992;147:1280-1.
9. Tay YK, Spernat D, Rzetelski-West K, Appu S, Love C. Acute management of priapism in men. BJU Int 2012;109:15-21.
10. Yenice MG, Şeker KG, Şam E, et al: Kılavuzlar Eşliğinde Priapizm Hastalarının Yonetimine İlişkin Deneyimlerimiz. J Reconstr Urol 2017;7:90-6.
11. Walsh PC, Retik AB, Vaughan ED, Wein AJ, Kavoussi AR, Novick AC, eds. Campbell's Urology. 8th ed. Philadelphia: W.B. Saunders; 2002:1619-71.
12. Ralph DJ, Borley NC, Allen C, Kirkham A, Freeman A, Minhas S, Muneer A. The use of high-resolution magnetic resonance imaging in the management of patients presenting with priapism. BJU Int 2010; 106:1714-8.
13. Welford C, Spies SM, Green D. Priapism in primary thrombocythemia. Arch Intern Med 1981;141:807-8.
14. Raven JL. Haemoglobinopathies in Australia. Med J Aust 1972;2:726-9.
15. De Siati M, Chierigo P, Contin F, Lazzarotto M, Rahmati M, Franzolin N. Priapism as a complication of heparin therapy. Arch Ital Urol Androl 1999;71:201-2.
16. Burke BJ, Scott GL, Smith PJ, Wakerley GR. Heparin associated priapism. Postgrad Med J 1983;59:332-3.
17. Zimbelman J, Lefkowitz J, Schaeffer C, et al. Unusual complications of warfarin therapy: skin necrosis and priapism. J Pediatr 2000;137:266-8.
18. Routledge PA, Shetty HG, White JP, Collins P. Case studies in therapeutics: warfarin resistance and inefficacy in a man with recurrent thromboembolism, and anticoagulant-associated priapism. Br J Clin Pharmacol 1998;46:343-6.
19. Brindley GS. New treatment for priapism. Lancet 1984;2:220-1.
20. Lue TF, Hellstrom WJ, McAninch JW, Tanagho EA. Priapism: a refined approach to diagnosis and treatment. J Urol 1986;136:104-8.
21. Levine JF, Saenz de Tejada I, Payton TR, Goldstein I. Recurrent prolonged erections and priapism as a sequela of priapism: pathophysiology and management. J Urol 1991;145:764-7.
22. de Holl JD, Shin PA, Angle JF, Steers WD. Alternative approaches to the management of priapism. Int J Impot Res 1998;10:11-4.