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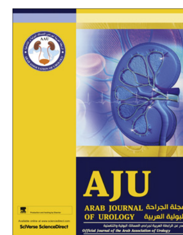

ONCOLOGY/RECONSTRUCTION
ORIGINAL ARTICLE

Urethral and penile war injuries: The experience from civil violence in Iraq

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KEYWORDS

Trauma;
Urethral;
Penile War injuries;
Civil violence

ABBREVIATIONS

IED, improvised explosive device;
GU, genitourinary

Abstract ***Objective:*** To determine the incidence, mechanism of injury, wounding pattern and surgical management of urethral and penile injuries sustained in civil violence during the Iraq war.

Patients and methods: In all, 2800 casualties with penetrating trauma to the abdomen and pelvis were received at the Al-Yarmouk Hospital, Baghdad, from January 2004 to June 2008. Of these casualties 504 (18%) had genitourinary trauma, including 45 (8.9%) with urethral and/or penile injuries.

Results: Of 45 patients, 29 (64%) were civilians and 16 (36%) were Iraqi military personnel. The injury was caused by an improvised explosive device (IED) in 25 (56%) patients and by individual firearms in 20 (44%). Of the patients, 24 had penile injuries, 15 had an injury to the bulbar urethra and six had an injury to the posterior urethra. Anterior urethral injuries were managed by primary repair, while posterior urethral injuries were managed by primary realignment in five patients and by a suprapubic cystostomy alone in one. An associated injury to major blood vessels was the cause of death in eight of nine patients who died soon after surgery ($P < 0.001$).

Conclusion: Urethral and penile injuries were caused by IEDs and individual firearms with a similar frequency. Most of the casualties were civilians and a minority were military personnel. Injuries to the anterior urethra can be managed by primary repair,

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while injuries to the posterior urethra can be managed by primary realignment. An associated trauma to major blood vessels was the leading cause of death in these casualties.

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Introduction

Trauma to the urethra in war situations is much less common and seldom fatal compared to chest or abdominal wounds. In fact, associated non-urological injuries are usually the more obvious, and often the most life-threatening, dictating priority treatment [1–3]. However, urethral injury can disable injured survivors for the rest of their lives, as it has a tremendous potential for creating serious urological 'cripples', including the well-known triad of stricture, incontinence and impotence [4]. Reports on genitourinary (GU) trauma during the Iraqi conflict have been limited to combat injuries amongst Coalition troops [5–7]. However, urban civil violence has been raging throughout the country since the beginning of the war in March 2003, and became a living hell for most of its population. Civil violence in Iraq reached an endemic level during the 4 years from 2004 to 2008, and civilians were daily exposed to violent acts in the streets and markets, or even in their houses. We sought to characterise the incidence, mechanism of injury, wounding pattern and surgical management of urethral and penile injuries sustained in civil violence during the Iraqi war. To our knowledge, this study is the first comprehensive report of urethral and penile trauma sustained in civil violence during the Iraq conflict.

Patients and methods

In all, 2800 casualties with penetrating trauma to the abdomen and pelvis were received at Al-Yarmouk Hospital (the teaching hospital of Al-Mustansiriya College of Medicine, Baghdad) from January 2004 to June 2008. On arrival at the hospital, the new casualty underwent prompt resuscitation, with control of shock and an evaluation of the injuries. Most of the cases had immediate surgical exploration by the hospital surgical team and, in the presence of GU injury, the management was at the discretion of the attending urologist. Of the 2800 casualties 504 (18%) had GU trauma, including 45 (8.9%) with urethral and/or penile injuries who were the subjects of this study.

Patient data were collected prospectively and analysed retrospectively. We examined patient records for age, whether they were civilians or military, the cause of injury (explosive device or individual firearm), the site of injury or injuries, associated injured organs, the type of surgical treatment and the outcome. Also, penile injuries were scored according to the organ injury severity scales of the American Association for the Surgery of Trauma [8]. In most of the patients a thorough preoperative evaluation was precluded by the urgent intervention of concomitant injuries to other organs. A postoperative follow-up for a sufficient time was not possible in many patients because of the difficult and dangerous situation in Iraq during the study period. The results were analysed statistically using the Pearson chi-squared test, with significance considered at $P < 0.05$.

Results

The results are summarised in Table 1. All patients were male with a median (range) age of 29 (14–55) years. Young adults, 20–39 years old, were the most common victims (35 patients, 78%). Of 45 patients with urethral and/or penile injuries 29 (64%) were civilians and 16 (36%) were Iraqi military personnel. Data on the number of military personnel who were wearing body armour at the time of injury were not available. The injury was caused by improvised explosive devices (IEDs) in 25 (56%) patients and by individual firearms in 20 (44%). The IEDs included car bombs and road-side bombs (14 and 11 cases, respectively), while individual firearms included US M16 A2 and Russian AK-47 automatic rifles and pistols.

Of the patients, 24 had penile injuries, 15 had injury to the bulbar urethra and six had injury to the posterior urethra (Fig. 1). Most of the penile injuries were not associated with urethral rupture, which was found in only seven cases. Of the 24 penile injuries, 19 (79%) were of grade 3 according to the severity scale, two (8%) were grade 4 and three (13%) were grade 5. Injury to the bulbar urethra was in the form of a complete rupture in 11 cases and partial rupture in four, while injury to the posterior urethra was in the form of complete rupture in all six cases.

Penile wounds were repaired, after debridement of obviously necrotic tissue, by suturing the tunica albuginea and approximation of Buck's fascia. After closing the penile skin, a Foley catheter was fixed, an elastic pressure dressing was applied and the penis was then taped to the lower abdomen. Total penectomy was resorted to in three cases with grade 5 penile injury. Injury to the penile and bulbar urethra was repaired by direct suturing or resection and anastomosis, with urethral catheter drainage for 2–3 weeks. Injury to the posterior

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