COMBAT UROLOGIC TRAUMA IN US MILITARY OVERSEAS CONTINGENCY OPERATIONS

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Abstract

Objectives: To report the occurrences and patterns of genitourinary (GU) trauma in the contemporary high intensity conflict of the Overseas Contingency Operations (OCO).

Materials and Methods: The Joint Theater Trauma Registry (JTTR) was queried for all US military members who received treatment for GU wounds and concomitant injuries (International Classification of Diseases-9th Rev. codes 55-72 and 600-950) sustained in OCO over 75 months between October 2001 and January 2008.

Results: Of the 16,323 trauma admissions in the JTTR, 819 (5%) had 1 or more GU injuries. Ninety percent of GU casualties were sustained in Iraq, and 65% are due to explosions. Average casualty age was 26 years (range 18-58) of which 98.5% were male. There were 887 unique GU injuries distributed as follows: scrotum 257 (29.0%), kidney 203 (22.9%), bladder 189 (21.3%), penis 126 (14.2%), testicle 81 (9.1%), ureter 24 (2.7%), and urethra 7 (0.8%). Of the 203 kidney injuries, 22% went to the operating room with 31 patients having nephrectomies performed. There were 189 bladder injuries, with 26 patients (14%) having concomitant pelvic fractures.

Conclusions: This report cites the greatest number of GU injuries during any military conflict. The distribution and percentage of casualties with GU injuries in the OCO are similar to previous conflicts, with the exception of a higher prevalence of bladder, scrotal and penile injuries. Consideration should be give to personnel protective equipment for areas associated with GU injuries and pre-deployment training directed at the care of these injuries.

Introduction

Historically, injury to GU organs during war is between 0.5 % and 8.0%. (1-4) The US military is currently engaged in a prolonged war on terror in various OCO. These conflicts involve hundreds of thousands of US service members and are the largest armed conflicts since the Vietnam War. The few published reports documenting GU trauma during OCO have only been from individual surgeons or medical centers, even though there is a global delivery of care.

Objectives

To report the occurrences and patterns of GU trauma in the contemporary high intensity conflicts of OCO.

Methods

Permission to review the JTTR was approved by the Institutional Review Board at Brook Army Medical Center. We queried the JTTR for all US service members receiving treatment for GU wounds. The results were analyzed by each ICD-9 code. We then compared and contrasted the data with published results from previous large scale conflicts.

Results

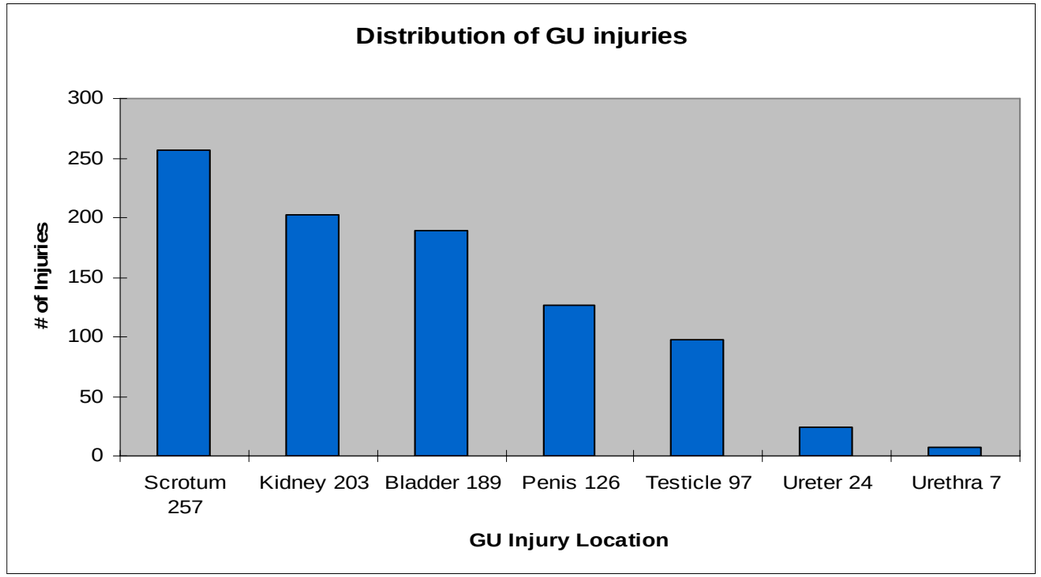
There are over 45,000 US trauma casualties to date with 16,323 trauma admissions in the JTTR. There were 819 patients, 5% of the population, with 1 or more GU injury for a total of 887 GU injuries. Ninety percent of GU casualties were sustained in Iraq. The average casualty age was 26 years (range 18-58). Four patients (0.5%) with GU injuries died, all with genital injuries, and without renal injuries. US Army personnel accounted for a majority of the wounded combatants, followed by US Marines, Navy and Air Force personnel. The median military rank was enlisted grade E-4. Female combatants comprised 1.5% of the casualties.

- The mechanism of these GU injuries can be accounted for as 535 (65.3%) explosion, 121 (14.8%) penetrating, 87 (10.6%) blunt, and 10 (1.2%) burn.
- Scrotal-testicular injuries accounted for 38% of GU injuries. Eighty four (33%) patients were taken to the OR for scrotal and/or testicular exploration/repair. In addition, there were a total of 81 testicle injuries with all patients undergoing operative intervention.
- Of the 203 kidney injuries, 22% (44 patients) went to the operating room and 31 patients underwent nephrectomies.
- For the 189 bladder injuries, operative intervention was required in 89 (47%) patients, and 26 patients (7%) had a concomitant pelvic fracture.
- There were a total of 126 penile injuries, of which 32 patients (25%) went to the operating room and 22 were treated with suture repair of a penis laceration.

Conclusions

A significant number of US casualties (5%) in OCO had one or more GU injuries. Explosions caused the majority of the injuries, except for injuries to the urethra and the ureter. The scrotum was the most injured GU organ. For casualties with a renal injury who went to the operating room, there was a 71% nephrectomy rate.

Reviews of injury patterns are important for development of training procedures and resource allocations. The incidence of GU injuries warrants deploying general surgeons receive a review of the management of GU injuries as part of their pre-deployment training. Continued collection of combat casualty data with critical evaluation will assist in improving patient, care and allow urologists and surgeons to recognize and treat GU injuries.



GU Injuries in OCO and Previous Conflicts (Percentage of Total Injuries)

	Current %	Bagdad CSH [1]	Bosnia Croatia [2]	Vietnam [3]	WW II [4]
Kidney	22.9	29.6	39.6	19.1	40
Ureter	2.7	2.0	7.8	5.2	3.3
Bladder	21.3	13.3	17.2	10.4	11.6
Urethra	0.8	17.3	4.6	12.0	15
Scrotum	29.0	19.4	22.7	32.8	30
Testicle	9.1	12.2	*	*	**
Penis	14.2	6.1	8.1	18.5	**

References

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