Genitourinary Trauma in the Military: Impact, Prevention, and Recommendations

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During the recent conflicts in support of Operations Iraqi Freedom, Enduring Freedom, and New Dawn, the increased reliance on dismounted patrols and frequent exposure to improvised explosive devices (IEDs) have amplified the presence of a relatively new type of trauma – genitourinary (GU) trauma. The GU system includes genitals, bladder, urinary tract, and kidneys. It is estimated that approximately 12 percent of war injuries involve some kind of GU trauma. In general, advanced technology, medicine, and equipment have boosted survival rates and many service members return home injured. Despite the increasing presence of GU trauma over the last decade, its impact on sexual, reproductive, psychological, and relationship functioning remains understudied. Here we provide a brief overview of GU trauma and the association with physical, psychological, and sexual challenges. This brief focuses on multiple levels of prevention to describe the scope of the problem and identify areas for improvement. As part of the discussion, specific policy recommendations and application strategies are provided.

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A New Kind of Trauma: GU Trauma

Until recently, renal trauma was the most common type of GU injury. Presently, the “signature” injury of combat involves a combination of lower limb amputation, pelvic fracture, and severe perineal injury. Recent research on young, male military personnel (i.e., under 40 years old) indicated that approximately 7 percent sustained genital injuries during military service. Data from the Joint Theater Trauma Registry (JTTR) indicated that approximately 5 percent of 16,323 trauma admissions between 2001-2008 involved GU injuries. The majority of these injuries were to the scrotum (29%), followed by the kidney (22.9%), bladder (21.3%), penis (14.2%), testicle (9.1%), ureter (2.7%), and urethra (0.8%). Similar research has found injury to external genitalia to account for the largest portion (over 70%) of all GU injuries. Over half (65%) of the GU injuries were due to explosions, 14.8 percent from penetrating trauma (firearms), 10.6 percent from blunt trauma, and 1.2 percent from burns.

Explosions are a primary source of injury in the recent conflicts. The use of dismounted combat operations have led to more numerous exposure to IED explosions, which has been a leading cause of GU injuries. For U.S. operations in Afghanistan, the use of dismounted patrols resulted in 350 percent more GU trauma, compared to U.S. operations in Iraq. Other JTTR research found that over 50 percent of GU injuries during a one year period in Iraq were due to explosions. Gunshot wound to the penis was also a leading cause of GU injury.

Primary Prevention of GU Injury

Primary prevention of GU injury is largely dependent on the use of personal protective equipment (PPE), including the use of a pelvic protection system (PPS). The U.S. PPS consists of two tiers of protection. Tier 1 is a protective undergarment (PUG) that is made of a knitted silk material with an antimicrobial agent. The PUG can be worn as or over underwear; mitigates wound infection; and reduces penetration of dirt and debris. Tier 2 is a protective out-garment (POG) that is made of Kevlar (DuPont, Wilmington, Delaware) between ballistic silk materials. The POG is worn over trousers and reduces penetration of fragments and larger debris. U.S. military personnel who deploy to combat are provided with body armor and, on an as needed basis, the PPS, which provides some protection against lower velocity projectiles and explosions.

While the initial round of PPS was designed for men, a specific design for women is necessary and should involve a higher waistline for additional protection. While the PPS provides protection against GU trauma, there is still a substantial risk of injury. Research indicates a significantly lower rate of overall GU injury in casualties who wore body armor at the time of injury compared to those who were not wearing body armor. It is important to note that not all injured military personnel were wearing PPS. Although the U.S. Army Research Laboratory has developed a
It is clear that the effects of GU injuries can be lasting, impact multiple areas of life and functioning, and can be costly.
Psychological & Sexual Functioning

GU trauma can also have long-term psychological consequences, in addition to the physical effects. While there is a dearth of research evaluating the psychological burden of GU trauma, the available research suggests a number of psychological health implications. Specifically, there is a higher prevalence of depression and PTSD in those with GU trauma, as well as a slower recovery process, greater distress, and more suicidal behavior than those without these types of injuries. The physical and psychological injuries that military populations experience, place them at greater risk for sexual functioning problems. Recent research indicates that military personnel with a genital injury are approximately 10 times more likely to report sexual functioning problems than those without a genital injury. While Tricare does not provide psychotherapy in connection with sexual dysfunction, it does provide limited psychotherapy sessions for other covered behavioral health problems or when medically/psychologically necessary for a diagnosed medical condition.

Key Findings and Recommendations

In response to the research findings and treatment gaps, below are key findings with specific recommendations for addressing each. These efforts have the potential to improve the well-being and quality of life of injured military populations.

Finding 1

There are currently two tiers of PPS that are available on a limited basis to service members in certain combat locations, but among those who are injured, not all have worn the PSS. Moreover, few studies have comprehensively evaluated the effectiveness and protective impact of PPS.

Recommendation

Conduct a comprehensive assessment of currently available PPS, on-the-ground use, compliance, sustained usage, and gender differences, as well as protective effects. If necessary, propose updates in design and dissemination of PPS and then re-evaluate the updated equipment.

Discussion

The current system of pelvic protection being employed by the military has shown preliminary success in reducing the severity GU injuries sustained during combat. However, there is still a need for a comprehensive assessment of the current distribution and usage dynamics, the potential effectiveness for long-term successful adoption, and gender differences in injury impact and usage. There is little known about the protective equipment available to women and how PPS varies in structure or performance compared to PPS for men. Results on these topics will aid in the development of innovative improvements in the equipment to enhance protective impact and short- and long-term usage. This initiative would also fit well with the Task Force on Urotrauma, as proposed in House of Representatives (H.R. 984), which proposes the establishment of a task force on urotrauma. Specifically, the task force would evaluate the incidence, duration, and morbidity and mortality of urotrauma, as well as the social and economic costs, and include an analysis of existing resources, research and programs aimed at enhancing prevention and treatment. The culmination of this research would be a long-term comprehensive plan for addressing urotrauma.

Finding 2

First responses to GU trauma are essential and currently have a well-structured system in place. This system can be further improved by incorporating collaborative and interprofessional approach to treatment of GU injuries.

Recommendation

Incorporate collaborative, interprofessional teams into patient care from the beginning of treatment.

Discussion

The identification and treatment of GU injuries are often difficult to treat as the symptoms often overlap with multiple diagnoses involving multiple disciplines. An interprofessional approach provides a promising solution to this challenge by ensuring that providers from multiple disciplines work collaboratively to assess, diagnose, and treat patients with these perplexing traumatic injuries. The need for well-coordinated collaboration across providers has been widely acknowledged, but few have implemented such approaches to patient care. Collaborative, interprofessional approaches have advantages for patients, providers, and the health care delivery system. However, working within an interdisciplinary team requires specific skills, knowledge, and abilities. Providers must understand roles and acknowledge each unique area of expertise. Offering innovative opportunities for providers to receive training in these skills will be essential in preparing effective interdisciplinary teams.

Finding 3

There are limited benefits that address the long-term management of GU trauma and the associated consequences of GU injury.

Recommendation

Expand benefits and coverage of the long-term consequences of GU injuries, including physical, fertility, psychological, and sexual functioning-related consequences, among others. Expand TSGLI and Tricare programs for service members who have experienced a GU injury.
Discussion

The TSGLI provides insurance benefits for severely wounded service members. However, the payment amount may not exceed $100,000 and those with multiple losses do not receive more benefits to cover their additional losses. Moreover, the long-term costs to treat the additional injuries often require costs beyond what is provided, which are not accounted for in the TSGLI. In addition to the limited life insurance benefit, health insurance coverage for some of the consequences of GU is also limited. Fertility coverage, in particular, is limited. While basic assisted reproductive services are available, men who have lost testicles or otherwise cannot produce sperm are limited in their options to reproduce, as sperm donation is not covered. The same is true to women who have lost ovaries or cannot produce eggs; donor eggs and surrogacy are not covered. Additionally, sexual functioning and fertility counseling may not be available through current insurance programs. Thus, service members with a GU injury and their family members are left without comprehensive treatment for injuries sustained in combat.

Conclusions

GU injuries have become more prevalent in recent years as dismounted patrols have increased. Most GU injuries involve the external genitalia and can have long-term consequences. While protective equipment is provided to those at high risk of GU injuries, not all wear the provided equipment for reasons that are unclear. More research needs to focus on improving existing PPS and improving usage compliance and long-term adoption of PSS in both men and women. For those who sustain injuries, there is a need to provide comprehensive treatment approaches early into the care plan to help reduce the subsequent impact of the injury. Interprofessional teams can help address various aspects of functioning. Physicians, nurses, social workers, physician assistants, and other health care professionals must coordinate their efforts and share common goals of providing, holistic, patient-centered care. Disparity emerges when teams of professionals must function interdependently in the workforce while the standard is to be trained in isolated programs. To reduce the burden of the long-term consequences of GU injury, it is important to provide adequate benefits and insurance coverage. Current policies do not provide adequate coverage of many of the consequences of GU injury, including fertility, psychological, and sexual functioning.

References


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