Dismounted complex blast injuries: Patterns of contralateral limb injuries in patients with lower extremity amputations.

Paul Ryan, MD, Claude Anderson, MD, Steven Wilding, MD

Category: Trauma

Keywords: below knee amputation, above knee amputation, symes amputation, blast injury

Introduction/Purpose: The United States Medical Corps has continued to evaluate and define the injury patterns of our service members in an effort to prevent injury and improve combat casualty care. The pattern of injury can be predicted by the mechanism of injury. One of the more recently described and studied mechanisms has been coined the ‘dismounted complex blast injury. This injury pattern involves traumatic amputation of at least one leg with a second injury involving another extremity in addition to an injury to either the pelvis, the abdomen, or the urogenital region. The purpose of this study was to better define and describe the injuries occurring to the non amputated extremity.

Methods: This is a retrospectively review of data from the US and UK Joint Theater Trauma Registries (JTTR) of consecutive patients admitted to the UK Role 3 hospital at Camp Bastion, Afghanistan, from January 1, 2009, to February 29, 2012. Data was obtained from the US JTTR (Joint Theatre Trauma Registry). Each patient was assigned an Injury Severity Score (ISS) and an Abbreviated Injury Scale (AIS) score. Only those patients with an AIS of 3 or greater (a serious injury) were included. All x-rays and CT scans were evaluated by two board certified orthopaedic surgeons and one board certified musculoskeletal radiologist. Fisher’s exact test was used to compare categorical data and binomial logistic regression was be used to compare proportions of types of injuries by traumatic amputation level observed.

Results: There were 295 patients with lower extremity injuries identified. 201 had traumatic lower extremity amputations, 140 with bilateral lower extremity amputations, 61 with single leg amputations. The mean age was 23.38 +/-3.77 years. All were male. Below the knee amputation was the most frequent amputation type observed, representing 55.7% of the amputations (29/52), the next most frequent was the through knee amputation representing 25%. The least frequent was the through ankle amputation. The presence of a symes level amputation was associated with an 8.1% increase in the odds of the presence of a skeletal foot injury in the rear lower extremity. There was also an association found between AKA level amputation and skeletal injury in the contralateral upper extremity.

Conclusion: This is among the first studies to correlate level of injury and associated musculoskeletal injury for the Afghanistan theater of operations. The results of this data set demonstrate that proximal lower extremity amputation levels are significantly associated with distal upper extremity skeletal injury. In addition, the Symes level of amputation is significantly associated with contralateral foot fractures. Amputation levels proximal to the ankle often present with associated Genitourinary injuries. Unique to this study is the demonstration of a significant association of upper extremity injury with a more proximal lower extremity amputation level.