G34 Blast Injuries in a Non-Military Setting: Findings and Future Implications

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After attending this presentation, attendees will observe a multi-disciplinary presentation of a non-military blast injury case that will illustrate the pathologic, anthropologic, and neuropathologic sequelae of such injuries. They will also learn of new research directions in the area of blast injuries.

This presentation will impact the forensic science community by describing the findings in a non-military blast injury case, a generally rare occurrence in the non-military setting. This information will directly impact fellows and residents in training, who are not exposed to these types of cases in a routine medical examiner setting. This education will prove useful in mass disaster scenarios.

Blast injuries are a form of trauma most common in military settings with military-grade weapons and ammunition. Because of this, non-military forensic pathologists, medical examiners, forensic anthropologists, and death investigators rarely see blast injuries, and the associated findings, in a decedent. Investigation of a potential blast injury case may require specific information and/or autopsy procedures that are not gathered in a routine death investigation or autopsy.

The most common non-military setting is industrial accidents. Industries involved with flammable/explosive/incendiary materials can yield situations in which workers can be subjected to the types of forces associated with blast injuries. All workplace fatalities must include an OSHA investigation, as they can be very helpful with providing specific information for that type of industry that would not necessarily be readily available.

In this case, the decedent was working on a chemical tank when the tank ignited. The decedent was not hit by shrapnel from the tank but instead was thrown against a chain link fence. He was transported to the hospital but died shortly after admission. His injuries were consistent with previously described typical blast-type injuries, including internal organ lacerations (without overlying cutaneous injuries), barotrauma, pulmonary trauma and bleeding, atypical skull fractures, and deep white matter hemorrhages in the brain.

The findings in this case bring to light the need to be familiar with blast injuries and the classification schema, which includes primary, secondary, tertiary, and quaternary injuries. This study had the benefit of having an in-house forensic anthropologist and an in-house forensic neuropathologist who were both available for consultation on this case, and were able to provide reports detailing the specifics of this unique type of trauma.

In addition, the case was referred to the working group on a Department of Defense grant for traumatic brain trauma from blast injuries. The working group is hoping to use this case in furthering their research for protecting soldiers from traumatic brain injuries and treatment as well.

In order to properly document and work-up a blast-related injury, it is quintessential to have a firm understanding of the pathologic consequences of blast injuries. By reviewing the case reports and classification schema, forensic pathologists and death investigators can be better equipped to deal with non-military blast related injuries, and possibly help further research to protect military personnel who are exposed to this type of injury on a regular basis.

Blast Injuries, Military, Neuropathology

