

BOOK REVIEW

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Review of: *Explosion and Blast Reported Injuries*, 1st edition

REFERENCE: Elsayed NM, Atkins JL. **Explosion and blast reported injuries**. 1st edn. Burlington, MA: Elsevier Academic Press, 2008, 380 pp.

This is a timely book with the almost daily reports of explosions somewhere in the world. The editor's goal is to provide an overview of the field of explosive and blast injuries. It is not meant as a manual for medical care of these injuries (although treatment and management are discussed) but is meant to provide a broad perspective for physicians, scientists, and engineers to help in their encounters with blast-injured casualties. The editors intentionally exclude the physics of explosions and the construction of explosive devices.

The book is organized into four parts: epidemiology of blast explosion, pathology/pathophysiology of blast explosion, modeling/mechanism of primary blast injury, and global experiences of blast injury and mass casualty management. The editors have gathered 39 international contributors with a broad diversity in experience that range from suicide bombings in Israel to computer modeling of blast injury.

There is a fair amount of redundancy in multiple chapters that one might expect in a book with numerous contributors. For example, most chapters describe blast waves and define the types of blast injuries (primary, secondary, tertiary, etc.). At first, this appeared to be due to lax editing but it seems intentional. For the person who reads the book from cover to cover, this redundancy becomes laborious. But for the reader who is interested in a particular chapter this redundancy allows the reader to quickly "get up to speed" on the topic without having to start with Chapter 1. For example in the concisely-written chapter by Tsokos on pulmonary blast injury, the context would have been lost without the "short blast overview" section that includes a useful Table (3-1). This is a key chapter for forensic pathologists and includes detailed gross and microscopic features of this unique lung injury. The other pathology/pathophysiology chapters focus on neurotrauma (Chapter 4), effects on the autonomic nervous system, and thermal injuries (momentary flame, radiant heat, and conflagration).

The chapter on neurotrauma introduces the term blast traumatic brain injury (bTBI). They note that emerging evidence suggests that this may be another class of head injury. It is still unclear what forces (overpressure, acoustics, etc.) are responsible for this injury and how it differs from classic concussive injury. Since victims may have both primary (direct blast wave exposure) blast injury as

well as secondary (fragment injuries) or tertiary injuries (deceleration/acceleration injuries), it is difficult to quantify the contributions of pure blast injury in these complicated clinical casualties.

The neurotrauma chapter, whose authors include neurosurgeons and neurologists, has a section on the clinical management of these injuries. The authors allude to the current operations in Iraq and Afghanistan and how advances in body armor have reduced mortality rates. This equipment, however, cannot fully prevent TBI. Consequently more soldiers are surviving what previously would have been fatal injuries but other injury conditions, like TBI, are becoming more prominent. The issues of second impact syndromes and the potential overlap of mild TBI with posttraumatic stress disorder also were addressed.

The chapters on modeling and mechanisms of primary blast injury include: multiscale computational modeling of the lung, biochemical mechanisms of blast injury (free radicals), and the inflammatory response to blast injury including assessment of macrophage inflammatory protein 2 and interleukin-6. These chapters would be of most interest to the basic researcher of blast injury. The chapter on computational modeling is the longest in the book (nearly 100 pages) and includes blast wave dynamics and forces including interactions with objects and the human body with numerous color images and graphs.

The final section on global experiences includes suicide bombings in Israel, the Soviet experience in Afghanistan with mine explosions (1980–1989), and otologic blast injury in Croatia during the 1990s. The Israeli section focuses on management of these events including response teams and triage and medical trauma care systems. The Afghanistan and Croatian chapters focus on particular types of injuries.

From a forensic perspective, a section on the forensic investigation of explosions that includes the identification of detonated bomb-making materials would have been a useful addition. For example, at autopsy or at the scene, what suspicious pieces should be collected? What do detonated "bomb" parts and explosive materials look like? How would these materials appear on radiographs? How should one investigate or test for explosive residue?

This book is not meant solely for forensic scientists, engineers, emergency responders, mass-fatality-response planners, or clinical physicians, but each group will find something in it that is useful for their practice. The editors and authors are successful in their goal of creating an overview of the field of explosive and blast injuries.

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