Preface

When I was invited by Springer to write this book on my experiences as a radiologist in Iraq, I immediately agreed (after consulting with my wife Jutta, of course) as it seemed the perfect “summer project” to fill the gap between retirement from the Air Force and starting my new career at the National Institutes of Health (NIH). The publisher found many of my publications on combat imaging, and since I had chaired several national and international conferences on trauma imaging, I was ready to put this book together in a short period of time. Our goal was to get the information out there for deploying radiologists to use and prepare for combat radiology. At the same time, I wanted to keep the book general enough to be a reference for any hospital with an emergency department or trauma unit since explosions, disasters, and mass casualties can happen at any time. Since ballistic injuries are often the unintended consequences anywhere man and guns collide, this book should be generalizable to most radiologists, emergency department physicians, trauma unit nurses/medics, and trauma surgeons worldwide.

Once I started writing, this book evolved differently than what I had originally envisioned. After discussions with many of my colleagues and friends, however, it seemed the resulting format is better than a systems-based approach that I had first planned. Those reading my initial drafts suggested that I capture the essence of the environment from the beginning and do not use a head-to-toe approach.

To set the stage, I included a background on what it is like for a radiologist to be in the military and have to deploy into harm’s way at a moment’s notice, what it is like to carry a weapon at all times, and what it is like to wear body armor and a helmet while consulting trauma surgeons on images, all while being attacked.

Following a description of combat scenes, to the layout of our combat hospital, I then decided to describe basic blast and ballistic properties both outside and inside the body. For example, I felt that showing photos I had taken during medical effects of blast in field tests in South Africa would show how extensive blast damage can be, even when made with basic materials. After discussing the types of explosives and the types of blast injuries, I then show some example images of patients exposed to different types of blast.
A combat-unique chapter further sets the scene of battlefield radiology and prepares one for the innovation and creativity necessary to help as many casualties as possible, when resources are strained. Several new medical ideas, concepts, and patented inventions have emerged from prior conflicts. Recent wars have achieved record-breaking lifesaving statistics. For example, our combat hospital had a 98% survival rate during our deployment in 2007, the highest recorded to that point. Many revolutionary technologies and processes contributed to these unprecedented proportions. I will touch on new tourniquets and their application: Air Evacuation, FAST and E-FAST, MDCT with 3D and MPR processing to include trajectory analysis, and APS (Anatomic Positioning System, like an anatomic GPS). Many of these concepts are still evolving, while others are patent-pending inventions in imaging advances, awaiting field implementation.

I believe that imaging is contributing significantly to determining salvageability of life, limb, and eyesight. Sharing our experiences with war casualties, with the most advanced imaging capabilities, will allow further progress in helping determine morbidity and mortality over time from an epidemiological perspective. Standard reporting schemes on penetrating trauma should help compare radiologic data mining with clinical correlation over the years in a more quantitative fashion. I will discuss my experiences, research, and theories on standardized and quantitative reporting along with advances that will allow these to be automated in the near future. This will make radiologists more efficient while providing more detailed imaging finding descriptions in a standard fashion.

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