PLOS Science Wednesday: We’re Karim, Martin and Tim, trauma surgeons who edited and contributed research to the new PLOS Medicine Special Issue on traumatic injury – Ask Us Anything!

PLOSCIENCEWEDNESDAY R/SCIENCE

I am Karim Brohi, a trauma surgeon and director of the Centre for Trauma Sciences at Barts Health and Queen Mary University & London. The Centre for Trauma Sciences has a broad research into all areas of trauma care. My research especially focuses on how the body responds to critical injury and how this understanding can lead to new survivors. And I’m Martin Schreiber, MD, the Chief of the Division of Trauma, Critical Care & Acute Care Surgery at Oregon Health & Science University. I am the head of the Trauma Research Laboratory at OHSU and we focus on resuscitation, novel blood transfusion strategies and cellular therapies in trauma.

We (Karim and Martin) recently co-edited the PLOS Medicine Special Issue on Trauma. In the collection we also published a paper on how the body’s immune system responds to critical injury in the first 2 hours after injury. This is a difficult time window to study in trauma but we found it holds very specific signatures of how the body responds in the early activation of inflammation (which is the first stage of healing). We also found that some patients had a different response in certain cell death and survival pathways that were associated with them developing organ failure later in their clinical course. Organ failure is a common complication of trauma patients with a high associated death rate in its own right. It appears this immediate post-injury period is critical to understanding the response to trauma and therefore is likely to be a critical period for interventions that may improve survival and reduce complications.

And I’m Tim Billiar**, Chair of the Surgery Department at the University of Pittsburgh and current President of the SHOCK Society, USA. My research focuses on how trauma, which induces a sudden and massive activation of the immune system, leads to an abnormal immune response in some individuals. This is important because this dysregulated immune response after severe injury has been linked to dysfunction of organs such as the lungs and an increased susceptibility to infections. My colleagues and I (Tim) recently published a perspectives article titled “Time for Trauma Immunology” in PLOS Medicine as well as the results of a study in humans and mice titled "IL33 Mediated ILC2 Activation and Neutrophil IL5 production in the Lung Response After Severe Trauma: A Reverse Translation Study from and Human Cohort to a Mouse Trauma Model" in the same journal. In the perspectives piece we make the argument that trauma should be viewed like many other major disease processes that result from a dysregulated immune response (e.g. autoimmunity); as a specialized area under the broader field of immunology. We posit that this way of looking at trauma would bring the tools and expertise of the rapidly advancing field of immunology to the study of severe injury. In our experimental study, we reverse translate observations made in a large cohort of injured humans into mice genetically engineered to study the IL33-Innate Lymphocyte Cell type 2 axis. We show that an immune pathway discovered for its role in allergic airway diseases appears to contribute to acute lung injury after trauma. This study supports the idea that the study of trauma is ripe for sophisticated immunologic studies based on observations made in injured humans.

We will be answering your questions at 1pm ET -- Ask Us Anything!
The AMA is still in progress

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