CORR Insights®: Role of Interleukin-6 as an Early Marker of Fat Embolism Syndrome: A Clinical Study

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Where Are We Now?

In the paper, “Role of Interleukin-6 as an Early Marker of Fat Embolism Syndrome: A Clinical Study,” the authors find a clear association between a spike in serum IL-6 level 12 hours after admission for extremity fractures and the development of what they define as fat embolism syndrome (FES). IL-6 has been shown to be among a group of cytokines that are expressed after trauma and can be associated with the development of lung injury and acute respiratory distress syndrome (ARDS). IL-6 has been shown to correlate with the severity of injury and the development of FES in animal models [2]. To date the exact role of IL-6 in the pathogenesis of FES in humans has not been determined. To explore the role of IL-6 in the development of FES in humans, the authors selected a small group from a very large volume of admitted patients to study only young healthy subjects with apparently only skeletal injuries.

Note from the Editor-in-Chief: This CORR Insights® is a commentary on the article “Role of Interleukin-6 as an Early Marker of Fat Embolism Syndrome: A Clinical Study” by Prakash and colleagues available at DOI [10.1007/s11999-013-2869-y](https://doi.org/10.1007/s11999-013-2869-y).

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They aimed to eliminate factors that would confuse the diagnosis of FES. They diagnosed FES in 14 of 48 patients using Gurd’s criteria, and found that the mean IL-6 peak at 12 hours in these patients was approximately double that of the patients who did not have FES develop. This difference was significant.

Where Do We Need to Go?

We hope that the measurement of serologic markers that correlate with injury severity will become a powerful tool in managing patients with multiple trauma. IL-6 could be especially useful, as it rises rapidly after injury and correlates with the magnitude of injury and the systemic inflammatory response. In this study it is clearly associated with the development of hypoxia and FES. Currently, we can rely only on clinical assessments of injury severity such as the New Injury Severity Score (NIIS) [1]. Serologic markers that measure the actual degree of tissue injury and the inflammatory response have the potential to gauge injury severity more definitively and to help identify those at greater risk of having FES, ARDS, and multisystem organ dysfunction develop.

How Do We Get There?

In this article, Prakash and his coauthors suggest that IL-6 may play a role in mediating lung injury. They also cite several other cytokines that may play a role in secondary organ injury following trauma. However, this study cannot substantiate such a role, as the data only document the association of a higher peak of IL-6 with the appearance of

FES. A causative relationship was not established. Future investigation in this field needs to further our understanding of the serologic response to trauma identifying those cytokines that are expressed, and how their expression correlates with the severity of injury and whether they play a role in secondary tissue injury that leads to ARDS and multisystem organ failure. As a prognostic tool, they will help identify victims who are at risk of ARDS who might benefit from early intervention. If these cytokines can be proven to play a role in secondary tissue injury, then targeting them with anticytokine agents may help to mitigate the inflammatory response and provide a therapeutic

opportunity to prevent the most common cause of death following severe injury.

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