

Editorial on “Epidemiology of fracture nonunion in 18 human bones”

David J. Hak

Department of Orthopedic Surgery, University of Colorado, Denver, USA

Correspondence to: David J. Hak, MD, MBA, FACS. Department of Orthopedic Surgery, University of Colorado, Denver, USA.

Email: david.hak@dhha.org.

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The investigators studied a health claims database of over 300,000 fractures (1). In this cohort of patients they found an overall nonunion rate of 4.9%. Nonunion rates were >10% in three bones; scaphoid (15.5%), tibia (14%) and femur (13.9%).

The investigators performed both univariate and multivariate analysis of a number of associated factors. Univariate analysis assumes that the response variable is influenced only by one other factor, while multivariate analysis assumes that the response variable is influenced by multiple factors or combinations of these factors.

They found that five patient specific risk factors significantly increased the risk of nonunion more than 50% across all bones: multiple concurrent fractures, prescription nonsteroidal anti-inflammatory drug and opioid use, open fracture, anticoagulant use, and osteoarthritis with rheumatoid arthritis. The authors conclude that the probability of fracture nonunion can be determined from patient-specific risk factors present at the time of their initial fracture, and that the risk of nonunion is a function of fracture severity, fracture location, disease comorbidity, and medication use.

The authors do caution that when working with large patient databases unanticipated associations are likely to be found. The associations found in these reviews do not

indicate causality. Causality of any individual factor can only be tested using a well-designed experimental study. The benefit of these big data projects is that they provide for possible hypothesis idea generation. These hypotheses can then be rigorously studied in future experimental studies.

As with any large database analysis, there are a number of limitations of this study. This particular database excludes unemployed and indigent patients who might have a higher rate of nonunion. Another area of concern are coding errors and imprecision of the coding categories that is inherent in any study using a claims database.

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None.

Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

References

1. Zura R, Xiong Z, Einhorn T, et al. Epidemiology of Fracture Nonunion in 18 Human Bones. JAMA Surg 2016;151:e162775.

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