Predicting Epidural Steroid Injection Outcomes with Lab Markers and Imaging Techniques

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Introduction
This literature review evaluates lab markers and imaging techniques as predictive tools for epidural steroid injection outcomes in treating radicular pain.

Methods
A literature search was performed using PubMed database. Each article included required a clear definition of radicular pain, and a prediction tool for epidural steroid injection outcomes measured by improvement in pain and/or function. 32 articles met selection criteria. Prediction tools included lab markers, imaging studies, clinical exam findings, epidural technique, EMG findings, and chronic opioid use. However, for the scope of this review four retrospective articles were included for analysis of imaging techniques, and four prospective articles were included for analysis of lab markers.

Analysis
Quality evaluation and prognostic accuracy grading were performed based on the 2011 American Academy of Neurology Clinical Practice Guideline Process Manual: Prognostic Accuracy® (see Tables below).

Results
Data on prognostic accuracy of imaging for determination of epidural steroid outcome is inadequate and conflicting (Level U). FN+γ < 0.1g/mL is a probable prognostic indicator of greater than 50% reduction of pain per VAS at 3 months after ESI (Level B). Data on fibronectin-aggrecan complex as a prognostic indicator of ESI outcome is inadequate (Level U). Data on hs-CRP as a prognostic indicator of ESI outcome is inadequate and conflicting (Level U).

Conclusions
Predictive tools for ESI outcome such as nerve root compression grading and inflammatory markers particularly elevated FNγ within the epidural space seem promising in the future. At this time, future research is needed with a larger sample size, broad spectrum of patients and defined outcome measurements at standardized follow-up time periods before practice recommendations can be made.