Payer Type and Opioid Use Predict Lower Likelihood Functional Improvement at Short-Term Follow-up after Lumbar Epidural Steroid Injection: Results of a Large Registry Study

Authors: Raquel Reisinger BS, Marc Caragea DO, Masaru Teramoto PhD MPH, Hank Shipman MD, Dennis Berry-Rieser, Muna Oli, Richard Kendall DO, Zachary McCormick MD

Background: Lumbar epidural steroid injections (LESI) are common interventions for the treatment of radicular pain. Bimodal responses are often seen, in which some patients experience excellent outcomes while others receive minimal effect from this intervention. Furthermore, while factors that predict improvement in pain have been evaluated, minimal literature exists regarding the prediction of functional improvement following LESI.

Purpose: To identify factors that predict functional improvement at short-term follow-up after LESI.

Study Design: Retrospective chart review of prospectively collected treatment outcome measurements of patients undergoing LESI using a clinical registry collected at the University of Utah.

Patient Sample: Patients who completed the Oswestry Disability Index (ODI) questionnaire both pre-procedure and one to three weeks post-procedure.

Outcome Measures: The outcome variables of interest were dichotomous variables with responder/non-responder status that have been commonly used to define a clinically significant improvement in function in the low back pain population: ≥ 7.1% and ≥ 30% reductions in ODI score, as well as ≥ 10-point and 15-point reductions in ODI score.

Methods: Logistic regression analysis was performed to examine the associations of predictor variables to the ODI responder/non-responder outcome variable. The predictor variables for the analysis included: age, baseline ODI score, Charleston Comorbidity Index (CCI), payer type, prior surgery, pre-injection opioid use, two-level injection, bilateral injection, repeat injection, trainee presence during injection, immediate numerical rating scale (NRS) change post-injection. An odds ratio (OR) and its 95% confidence interval (CI) were calculated for each predictor variable in the logistic regression models.

Results: A total of 606 patients were included in the analysis. More than half of the patients (56.8%) reported a ≥ 7.1% reduction in ODI score, and close to 30% reported a ≥ 30% reduction in ODI score. Approximately 36% and 20% of the patients reported ≥ 10-point and ≥ 15-point reductions in ODI score, respectively. Payer type and pre-injection opioid use were significantly associated with ≥ 30%, 10-point, and 15-point reductions in ODI, after adjusting for the other factors (p < 0.05).

Conclusions: When using various common definitions of minimal clinically important change according to ODI score improvement, payer status and pre-injection opioid use were identified as negative prognostic factors for functional improvement at short-term follow-up after LESI.