

Choi HK, Hahn S, et al. Epidural Steroid Injection Therapy for Low Back Pain: A Meta-analysis. Int J Technology Assessment in Health Care 2013;29(3):244-253.

Design: Meta-analysis of randomized clinical trials

PICOS:

- Patient population: patients with low back pain and radiculopathy regardless of duration
 - o Trials of LBP from acute major trauma, cancer, infection, spondyloarthropathy, pregnancy, and pain after back surgery were excluded
- Intervention: Epidural steroid injection (ESI) by any route of administration
- Comparison: Interventions other than ESI, except that studies using surgery as controls were excluded
- Outcomes: At least one of these: pain status, back-specific disability index, or number of patients who underwent surgery; outcomes were evaluated on long-term basis at 6 or 12 months
 - o Pain scores (VAS) were standardized on a 10 point scale; disability scores were based on Oswestry and Roland-Morris scales
- Study type: Only randomized controlled trials with at least 6 months of follow-up

Study type and selection:

- Databases included MEDLINE, EMBASE, and the Cochrane Library through September 2011
- Two authors independently reviewed articles for inclusion in the meta-analysis and independently assessed the quality using the Cochrane Risk of Bias tool

Results:

- 221 full text studies were evaluated, and 29 were included in the review; most exclusions were for short follow-up duration or for irrelevant comparisons
- 8 studies performed ESI by the caudal route, 10 by the interlaminar route, and 9 by the transforaminal approach; in 2 studies, the approach was not clearly described
- For pain the authors pooled the baseline scores from studies involving 12 comparisons, and reported that the baseline pain scores were lower for the ESI groups than for the control groups, suggesting that the ESI groups were healthier at baseline
 - o The authors then pooled the pain scores at follow-up using the baseline scores as covariates, and calculated that there were no differences between ESI and control on pain scores

- As they did with the pain scores, the authors pooled the baseline disability scores, but reported no difference between ESI and control
 - o Again, the authors used the baseline disability scores to adjust the follow-up disability scores, and reported that there were no differences between ESI and control interventions on disability
- The authors also pooled the effect of ESI on subsequent surgery for caudal, interlaminar, and transforaminal injections, reporting that none of the ESI interventions reduced the risk of undergoing subsequent surgery

Authors' conclusions:

- ESI is no more effective than control interventions in improving pain or disability scores in the long term
- ESI is no more effective than control interventions in reducing the need for surgery in back pain patients with radiculopathy
 - o There are potential difficulties in interpreting surgery as an outcome of treatment, since some studies may include patients for whom surgery is not an option
 - o However, the studies all included patients with radicular pain, and the results were fairly homogeneous among studies
- Benefits of ESI for LBP was not proven at 6 months or longer term

Comments:

- The outcome summaries for pain and disability, although calculated differently than was done by Pinto et al 2012, arrive at similar conclusions
- The conclusions regarding need for surgery are dubious and probably not supported by the data
 - o Table 4 displays the studies which were used to compare need for surgery in patients who received ESI or other interventions
 - o Of these studies, only Riew 2006 used surgery avoidance as a primary outcome measure; this was a subsequent or secondary outcome in the other studies
 - o Riew 2006 is not reported accurately
 - The authors used Riew 2006 as a summary measure of both Riew 2000 (the initial study) and Riew 2006 (the 5 year follow-up study)
 - Riew 2000 randomized and reported on 55 patients and showed a reduced risk for surgery in favor of ESI
 - Riew 2006 had follow-up data for 21 patients, 12 ESI and 9 control (local anesthetic) patients

- Riew 2006 reported surgery in 3 of the 12 ESI patients and 1 of the 9 local anesthetic controls
- The authors report this incorrectly, with 3 of 12 ESI patients having surgery and 1 of 19 controls, suggesting that Riew overall shows that the control intervention was more effective than ESI
- The correct analysis of Riew should include all 55 patients randomized in 2000, when 8 of 28 ESI patients had an operation and 18 of 27 control patients had an operation in the first year
- Overall, Riew favors ESI over local anesthetic for surgery avoidance
- One other data point in Table 4 appears to be incorrect; Ghahreman 2010 comparing ESI vs. bupivacaine had 10 of 28 ESI patients with surgery, not 4 of 10 as appears in the table

Assessment: An error-prone meta-analysis which is inadequate for evidence of the effect of ESI on the need for surgery and is redundant with respect to the effect of ESI on pain and disability