Quraishi NA. Transforaminal injection of corticosteroids for lumber radiculopathy: systematic review and meta-analysis. Eur Spine J 2012;21:214-219.

Design: Meta-analysis of randomized clinical trials

PICOS:

- Patient population: patients with radicular low back pain
- Intervention: transforaminal or periradicular infiltration of glucocorticoids
- Control/comparison: patients without radicular infiltration of steroids
- Outcomes: Standardized mean differences between treatment groups in pain VAS scores and Oswestry Disability Index (ODI) at specified time points after the injection
- Study types: randomized controlled trials

Study selection and evaluation:

- Databases were PubMed and EMBASE from 1966 to 2009, with searches of reference lists of articles and the Current Controlled Trials Register of the Cochrane Database
- Study results were abstracted into a computerized spreadsheet for analysis

Results:

- Initial search identified 126 papers, of which 5 randomized trials of lumbar transforaminal steroids were identified for analysis
- Only 3 of these trials had satisfactory follow-up of patients with VAS and ODI scores
- In these 3 trials, 187 patients received transforaminal steroids, and were compared with 181 control patients who received no steroid injection
    - In 2 trials, 117 patients had bupivacaine plus steroid and 119 had only bupivacaine
    - In 1 trial, 80 patients were injected with bupivacaine plus steroid with 80 patients injected with saline
- Meta-analysis of the three month VAS data for these 3 studies showed a difference of 0.2 standard deviations (SD) in favor of steroid injection, with confidence intervals between 0.00 and 0.41 SD
- Meta-analysis of the three month ODI data showed no difference (0.00 SD, 95% CI between -.0.21 and 0.20) between groups
- One study not included in the meta-analysis randomized 55 patients to transforaminal betamethasone plus bupivacaine (n=28) or bupivacaine alone (n=27), and compared numbers of patients avoiding an operation; 33% of the bupivacaine patients and 71% of the steroid patients avoided an operation after a mean follow-up of 23 months, significantly favoring steroid injection
- One other study not in the meta-analysis randomized patients to transforaminal betamethasone plus lidocaine (n=25) or to saline trigger point injection (n=23), reporting more successful outcomes (satisfaction, Roland-Morris score improvements, and 50% pain reduction) in the steroid group (85%) than the saline group (48%) after average follow-up of 16 months

Authors' conclusions:

- Transforaminal steroid injections provide greater pain VAS relief (0.2 SD) than control transforaminal injections, but there is no difference in disability measured by the ODI
- This information may have implications for clinical practice
    - Transforaminal epidural injections reduce pain scores in patients with lumbar radiculopathy when compared to doing nothing
    - No additional benefit was found by adding steroid to local anesthetic, however
- Only three studies were found which reported outcomes whose results could be combined as standardized mean differences, and mean scores may camouflage treatment differences if the data are not normally distributed

Comments:

- Only one author did the study selection and analysis; for systematic reviews, it is standard practice to have at least two authors independently select and evaluate the relevance and quality of studies for inclusion in the analysis
- The criteria for selection and assessment of study quality (risk of bias) are not described clearly, and the reader must speculate about reasons for inclusion or exclusion of identified studies; the Cochrane Review methods were not followed
- One of the studies not included in the meta-analysis (Vad 2002) reported greater "success" with transforaminal injections than with saline trigger-point injections, but the randomization was not clear, the study was not blinded, and the risk of bias is high (inadequate for evidence)
- The other study not included in the meta-analysis (Riew 2000) reported that surgery was avoided by more patients in the steroid group than in the bupivacaine group, but it did not have a tabular display of baseline data and did not have a tabular display of results, making it unlikely to be adequate for inclusion as evidence
- Two of the three included studies injected the control group with transforaminal local anesthetic, and one injected the control group with transforaminal saline, but the meta-analysis showed no statistical heterogeneity between studies, even though clinical heterogeneity might be expected
    - Among the included studies, Karppinen 2001 enrolled only patients with abnormal discs, but none with spinal stenosis; Ng 2008 and Tafazal 2009 enrolled a mix of disc herniation and stenosis patients
    - Ng and Tafazal both did subgroup analyses of stenosis and disc patients; Ng reported that there was no difference between these diagnoses with respect to ODI at 3 months, but Tafazal reported greater change in the 3 month ODI in patients with disc herniation than in those with stenosis (but both subgroups had the same ODI scores in the bupivacaine and in the bupivacaine plus steroid treatment groups)

- Since some of the theoretical basis for steroids relates to an inflammatory response to a herniated disc, implying that herniated discs would respond more favorably to steroids than would stenosis, it would be important to repeat such analyses in future trials

Assessment: Inadequate for any definitive statement of evidence of the effect of transforaminal epidural steroids on herniated discs or lumbar stenosis; a recent observational study correctly concludes that further study is needed to determine their long-term value

References:

Riew KD, Yin Y, et al. The effect of nerve-root injections on the need for operative treatment of lumbar radicular pain. JBJS Am 2000;82-A:1589-1593.

Vad VB, Bhat AL, et al. Transforaminal epidural steroid injections in lumbosacral radiculopathy: a randomized controlled trial. Spine 2002;27(1):11-16.