The Effect of Spinal Steroid Injections for Degenerative Disc Disease
Glenn R. Buttermann M.D., M.S., F.A.A.O.S

Abstract

Background
No conclusive evidence exists to determine that spinal steroid injections give lasting improvement in patients with predominantly axial low back pain resulting from lumbar degenerative disc disease (DDD).

Purpose
The objectives of the study were to determine the effect of epidural steroid injections (ESIs) and intradiscal steroid injections (ISIs) in patients who exhibit DDD symptoms for more than 1 year and to determine whether patients with inflammatory end-plate changes are a unique subgroup of DDD patients in terms of treatment response.

Study Design
Pain and function in patients with DDD were prospectively assessed by an outcomes questionnaire before and after various spinal injections. Further correlation was made with end-plate inflammatory (Modic Type 1) changes identified on magnetic resonance imaging (MRI).

Patient Sample
ESI was performed in 232 patients who were referred for treatment of DDD, and discography with or without intradiscal steroid was performed in 171 patients who were possible spinal arthrodesis candidates.

Outcome Measures
Pain and function were determined by a self-administered outcomes questionnaire that consisted of a visual analog pain scale, pain drawing, Oswestry Disability Index, use of pain medication and opinion of treatment success.

Methods
ESI was performed in 93 patients with DDD and inflammatory end-plate changes and in 139 patients without inflammatory end-plate changes. Patients with inflammatory end-plate changes (n=78) or without inflammatory end-plate changes (n=93), all of whom were considered fusion candidates, underwent discography with or without intradiscal steroid in a randomized fashion. Pain and function were prospectively determined by a self-administered outcomes survey (VAS pain, Oswestry Disability index [ODI], pain diagram [PD] and opinion of success) before and after the patients’ injection for a 2-year follow-up period. MRI and discography results were correlated with patient outcomes scores.
Results

ESI was effective in improving pain and function, as assessed by outcomes scores at short-term follow-up. However, at 2 years, less than one-third had not had additional invasive treatment. Patients with inflammatory end-plate changes had greater improvement in ODI and PD scores in the first 6 months than did those patients without the end-plate changes. Intradiscal steroid injections into discs with concordant pain at the time of discography led to significant improvement in patients with inflammatory end-plate changes in all outcomes scales, but only minimal temporary improvement in patients without the end-plate changes. Disc pressure manometry at the time of discography found that discs with adjacent inflammatory end-plate changes reproduced symptoms at pressures significantly lower than those in other types of discs.

Conclusions

Spinal steroid injections, both ESI and ISI, are beneficial for a small number of patients with advanced DDD and chronic low back pain. For those patients in whom a beneficial effect is found, spinal steroid injection is a low-risk and rapid treatment option. Spinal steroid injections are more effective in patients with MRI findings of discogenic inflammation, specifically adjacent inflammatory end-plate changes.