

12.6 Therapeutic Lumbar Epidural Interventions

Epidural procedures are applied in the cervical, thoracic, and lumbosacral regions. While these include diagnostic, as well as therapeutic interventions, these therapeutic and diagnostic interventions hold much less importance for epidural procedures rather than diagnostic facet joint interventions.

The indications, frequency, and total number of interventions have been considered important issues, even though debated and poorly addressed. These are based on flawed assumptions from nonexistent evidence. Over the years, some authors have recommended one injection for diagnostic as well as therapeutic purposes. Some have preached 3 injections in a series irrespective of a patient's progress or lack thereof; whereas, others suggest 3 injections followed by a repeat course of 3 injections after 3-, 6-, or 12-month intervals. There are also proponents who propose that an unlimited number of injections with no established goals or parameters should be available. A limitation of 3 mg per kilogram of body weight of steroid or 210 mg per year in an average person and a lifetime dose of 420 mg of steroid also have been advocated; however, with no scientific basis. The comprehensive review of the literature in preparation of these guidelines and review of all the systematic reviews has not shown any basis for the above reported assumptions and limitations. The administration must be based solely on patients' response, safety profile of the drug, experience of the patient, and pharmacological and chemical properties such as duration of action and suppression of adrenals (55). Further, multiple well controlled trials have illustrated no significant difference with local anesthetic alone, or in combination with local anesthetic and steroids (58).

Side effects of steroids are significant based on the complex pharmacokinetics and systemic absorption of epidurally administered steroids which has been explored in multiple reports. Friedly et al (1058) assessed systemic of epidural steroid injections for spinal stenosis in 200 patients receiving corticosteroids, with 32 patients (20.3%) experiencing cortisol reduction at 3 weeks of greater than 50% compared with 10 patients (6.7%) treated with lidocaine only. The effect on a 3-week cortisol changes did not differ by patient level characteristic. Further, those patients who were treated with methylprednisolone or triamcinolone had an average 3-week cortisol reduction of 41% and 41.6% from baseline respectively. In addition, patients treated with betamethasone or dexamethasone, found no significant changes with cortisol that they were similar to lidocaine alone. Hooten et al (1059) showed tri-

amcinolone concentrations almost 22 days. Multiple others have described HPA axis suppression (1075) and other side effects with increase in blood glucose levels along with adverse immune influence leading to influenza infections with specific concerns during COVID (1061-1064). In a dose dependant evaluation, Habib et al (1064) in 2013, examined the magnitude and duration of the suppression of a single epidural injection of methylprednisolone. Eighty-six percent of the patients who received 80 mg dose were reported to have laboratory confirmed HPA axis suppression one week post injection compared to 53% of those receiving 40 mg dose. Further, 20% of all participants had continued suppression at 4 weeks post injection.

Thus, the frequency may be based on the type of injectate with no significant effect with local anesthetics with potential repeat of injection therapy if necessary after a 2 week waiting period, for dexamethasone and betamethasone of 2 to 4 weeks and for methylprednisolone and triamcinolone 4 weeks and 4 to 6 weeks based on the dosage.

Manchikanti et al performed multiple randomized controlled trials with inclusion of over 12,000 patients with local anesthetic alone or with steroids utilizing a low dose betamethasone (i.e., 6 mg) has not reported any complications.

During COVID-19 pandemic it may be crucial to follow these rules from the CDC, as well as guidance from multiple organizations including ASIPP (51,52,55,58).

12.6.1 Lumbar Epidural Injections

Lumbar epidural injections include caudal, interlaminar, and transforaminal. Common indications are as follows:

- Chronic low back and/or lower extremity pain of at least 3 months duration which has failed to respond or poorly responded to noninterventional and non-surgical conservative management resulting from:
 - Disc herniation/lumbar radiculitis: (evidence – Level I with strong recommendation for caudal, interlaminar, and transforaminal)
 - Lumbar spinal stenosis: (evidence – Level II for caudal with moderate to strong recommendation, Level II for lumbar interlaminar with moderate to strong recommendation and Level IV to III with moderate recommendation for lumbar transforaminal)
 - Post-lumbar surgery syndrome: (evidence – Level II for caudal with moderate to strong recommendation)
 - Axial or discogenic low back pain without facet