

## ONLINE FIRST

# Spinal Injection Therapy for Low Back Pain

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**L**OW BACK PAIN IS COMMONLY REPORTED BY PATIENTS in primary care and will affect most adults at some time during their lifetime. The socioeconomic burden of low back pain is high. In the United States, the condition accounts for 2% of all physician office visits and is the fifth most common reason for primary care office visits.<sup>1</sup> Between 1997 and 2005, medical expenditures for spine-related problems increased more rapidly than overall health expenditures.<sup>2</sup> One treatment option for low back pain is injection therapy, which received attention in 2012 after the fungal meningitis outbreak caused by contaminated steroid injections.<sup>3</sup> A recent study among privately insured populations in the United States revealed substantial practice variation in the use of injection therapy by practitioners.<sup>4</sup> This study demonstrated that the average number of injection procedures per patient varied from 1 to 9 procedures per year between the lowest and highest decile of practitioners.<sup>4</sup> To know whether high utilization rates of individual clinicians also reflect favorable clinical outcomes, procedure rates should be linked to the severity of the spinal pathology and patient-reported outcomes.

Injection therapy in patients with low back pain generally consists of a heterogeneous group of interventions with differences in the location (ie, target tissue) of the injection, pharmaceutical agents (eg, corticosteroids, local anesthetics, and a range of other drugs such as nonsteroidal anti-inflammatory drugs [NSAIDs], morphine, sodium hyaluronate, benzodiazepines, and vitamin B<sub>12</sub>) and dosages used, and indications, depending on the presumed underlying source of the pain, such as facet joints, epidural space, intervertebral disks, ligaments, muscles, or trigger points. Injections may be applied in different stages of low back pain (acute, subacute, and chronic), in sciatica, and sometimes also for diagnostic purposes.<sup>5</sup> This heterogeneity regarding purpose and content of injection therapy has to be considered when evaluating studies of the effects of injection therapy in patients with low back pain.

The effects of various types of injection therapy for subacute and chronic low back pain have been evaluated in a

2009 Cochrane Collaboration systematic review.<sup>5</sup> This review identified 18 randomized controlled trials evaluating the effects of injections in subacute and chronic low back pain. The interventions varied from epidural or facet joint injections with corticosteroids or anesthetics to muscular or ligament injections with anesthetics or vitamin B<sub>12</sub>, whereas the control groups received placebo or other treatments.<sup>5</sup> The most important comparisons in this review were epidural corticosteroids vs placebo injections (n=2), epidural injections vs other treatments (n=3), epidural injections with local anesthetics vs other treatments (n=2), facet joint injections with corticosteroids vs placebo injections (n=2), and facet joint injections with corticosteroids vs other treatments (n=4). A number of other comparisons were made in individual studies.<sup>5</sup> Overall, the studies were too heterogeneous to allow statistical pooling. Prevalent methodological limitations included a lack of clarity regarding concealment of random treatment allocation, no reporting of cointerventions, and no reporting of an intention-to-treat analysis. The more recent studies had more limitations. The results of the studies varied, but only 6 of the 18 trials showed significant results for at least 1 outcome (pain, disability, or generic health status) in favor of one of the treatments, and only 4 studies reported effects that could be considered clinically important. No clear pattern emerged from these 6 trials.

More recently, a meta-analysis was published on the efficacy of epidural steroid injections in patients with sciatica, and the results were somewhat better than the results in patients with low back pain.<sup>6</sup> Twenty-three placebo-controlled trials were included and a small significant pooled effect for treatment of leg pain over short-term follow-up (6-point difference on a scale of 0-100 points) was found; even smaller nonsignificant effects were found over the longer term.<sup>6</sup> In these studies, the significant effects did not reach thresholds for clinically meaningful effects, based on established standards (ie, 10 to 30 points on a scale of 0-100 points).<sup>6</sup> Overall, the results of both reviews indicate that current scientific evidence is insuffi-

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cient to support the use of injection therapy in patients with low back pain or sciatica.

Among the internationally available multidisciplinary guidelines on low back pain, only 1 guideline, from Belgium, recommends injection therapy.<sup>7</sup> Guidelines from the United States, Europe, Italy, and the United Kingdom do not recommend injection therapy for chronic low back pain. Instead, they recommend brief education about low back pain, back schools (ie, school-based education and skills programs, including exercises, supervised by a paramedical therapist or medical specialist), NSAIDs, opioid analgesics, back exercises, spinal manipulative therapy, multidisciplinary rehabilitation, and behavioral therapy.<sup>7</sup>

Based on available literature, injection therapy for low back pain and sciatica can be regarded as having limited clinical benefit. The reported guidelines indicate that clinicians currently have other more evidence-based and noninvasive treatment options at their disposal, such as NSAIDs in the acute phase and supervised exercise therapy and multidisciplinary rehabilitation in the chronic phase.<sup>7</sup> Patients with low back pain differ in their clinical presentation and may respond differently to treatments. Injection therapy of any kind may be beneficial in individual cases or subgroups. Nev-

ertheless, given the weak scientific evidence base and the availability of noninvasive and more effective alternatives, physicians and policy makers should not recommend the use of injection therapy for patients with low back pain and sciatica.

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