Cervical Epidural Injections and Diagnostic Spinal Nerve Blocks

DEFINING APPROPRIATE COVERAGE POSITIONS

North American Spine Society 7075 Veterans Blvd. Burr Ridge, IL 60527

Introduction

North American Spine Society (NASS) coverage policy recommendations are intended to assist payers and members by proactively defining appropriate coverage positions. Historically, NASS has provided comment on payer coverage policy upon request. However, in considering coverage policies received by the organization, NASS believes proactively examining medical evidence and recommending credible and reasonable positions may be to the benefit of both payers and members in helping achieve consensus on coverage before it becomes a matter of controversy.

Methodology

The coverage policies put forth by NASS use an evidence-based approach to spinal care when possible. In the absence of strict evidence-based criteria, policies reflect the multidisciplinary and non-conflicted experience and expertise of the authors in order to reflect reasonable standard practice indications in the United States.

NASS Coverage Policy Methodology

Scope and Clinical Indications

Cervical epidural steroid injections (CESIs) and diagnostic spinal nerve blocks are commonly used to treat and evaluate patients suffering from various forms of neck and/or radicular pain. Therapeutic injections include interlaminar CESIs and transforaminal CESIs. Diagnostic injections include selective spinal nerve root blocks (SNRBs).

CESIs and SNRBs are indicated for the **treatment** and/or evaluation of radiculopathy or radicular pain. Suitable candidates may be treated with a maximum of four diagnostic and/or therapeutic injections within a 6 month period. Repeated therapeutic CESIs are only indicated in cases where there was a documented positive response with a previous CESI in treating that specific pain condition. All injections should be performed with fluoroscopic or computed tomography (CT) image guidance.

1. **CESIs,** either interlaminar or transforaminal, are indicated for the treatment of cervical radicular pain due to the following causes that meet the following criteria:
    a. Cervical disc herniations, disc protrusions, disc bulges (e.g. disc osteophyte complexes), cervical spinal stenosis (central or foraminal stenosis) noted on an

advanced imaging study (MRI or CT) that are consistent with and appear to be contributory to the patient's symptoms.

b. Failure of a course of supportive non-interventional care which can include observation, oral medications, physical therapy and/or activity modification

2. Diagnostic **SNRBs** are indicated in the evaluation and diagnostic work-up of radicular pain due to the following causes:
    a. Cervical disc herniations, disc protrusions, disc bulges (e.g. disc osteophyte complexes), cervical spinal stenosis (central or foraminal stenosis) noted on an advanced imaging study (MRI or CT) that are consistent with and appear to be contributory to the patient's symptoms.

3. Diagnostic **SNRBs** are indicated in the evaluation and diagnostic work-up of radicular pain for the following scenarios:
    a. As a diagnostic modality in order to determine or confirm the (or most) symptomatic level (i.e. site of compression) in presence of multi-level involvement for which the primary symptomatic level is unclear
    b. Radiculopathy without imaging evidence of compression to confirm or rule out a symptomatic level when clinical findings and imaging studies are discordant

CESIs and SNRBs are **NOT** indicated in the following scenarios:

a. Patients with non-specific neck pain without arm or radicular pain (i.e. isolated axial neck pain)
b. Clinical evidence of myelopathy from cervical spinal cord compression
c. Patients who already have failed a trial (1-2 injections) of therapeutic CESIs for a specific episode of radicular pain.

Rationale

Item 1

There is extensive worldwide experience with CESIs of local anesthetic and corticosteroid for the treatment of cervical radiculopathy and cervical radicular pain. Historically, the earliest reports of CESIs are from Europe in the mid-20th century, which documented its use for the treatment of so-called cervicobrachial neuralgias. Its use in North America began in the 1980's (Shulman M. Anesthesiology

1984; 61:A223; PurkisIE. The Pain Clinic 1986; 1:3-7; CicalaRS. The Clinical Journal of Pain 1989; 5:143-145).

The proposed mechanism of efficacy of CESIs is related to the inflammation associated with cervical radiculopathy. It is postulated that corticosteroids reduce inflammation (and subsequently pain) through inhibition of the synthesis or release of proinflammatory substances. Additionally, corticosteroids have been shown to have a temporary local anesthetic effect. (Manchikantil L. Pain Physician 2002; 5, 2:182-199).

There are a number of systematic reviews and society guidelines that have examined the utility of CESIs. In their 2010 Guideline for The Treatment of Cervical Radicular Pain, the World Institute of Pain issued a positive recommendation for interlaminar cervical epidural steroid injections for the treatment of cervical radicular pain (Pain Practice 2010; 1:1-7). A systematic review by Abdi in 2007, found moderate evidence that both transforaminal and interlaminar cervical epidural steroid injections provided short and long-term relief from cervical radicular pain (Pain Physician 2007; 10, 1:185-212). A systematic review by Benyamin in 2009, reported that interlaminar cervical epidural steroid injections provide a significant effect in relieving short and long-term cervical radicular pain and cervical radiculopathy (Pain Physician 2009; 12, 1:137-157). The North American Spine Society Clinical Guidelines for The Diagnosis and Treatment of Cervical Radiculopathy from Degenerative Disorders in 2010 recommended consideration of transforaminal epidural steroid injections for the treatment of cervical radiculopathy due to degenerative disorders. A North American Spine Society Review and Recommendation Statement in 2011 concluded that cervical epidural steroid injections provide relief from cervical radiculitis in 60% to 70% of patients, and relief is maintained for greater than one year.

CESIs have been demonstrated to be more effective than controls in a number of studies. Stav (Stav A. ACTA AnaesthesiolScand 1993; 37:562-566) performed a randomized control trial that showed cervical interlaminar epidural injections of local anesthetic and corticosteroid were more effective than trigger point injections of local anesthetic and corticosteroid into the posterior neck muscles (i.e. control) for the treatment of cervical radicular pain. One week after the last injection, good or very good pain relief was reported in 76% of the epidural group versus 35.2% of the control group. One year after injection, good or very good relief was noted in 68% of the PCSI group versus 11.8% in the control group. At both one week and one year, the epidural group had statistically significant greater pain relief, recovery of capacity for work, and decreased daily consumption of analgesics compared to controls.

Dreyfuss (Dreyfuss P. Pain Medicine 2006; 7: 237-242) performed a randomized control trial comparing cervical transforaminal injections performed with dexamethasone or triamcinolone for the treatment of cervical radicular pain. At 4 weeks both groups had statistically and clinically significant improvements. There was no significant difference in cervical radicular pain between the two groups. There was, however, a strong correlation between pain relief and restoration of daily activities in the triamcinolone group that was not found in the group treated with dexamethasone.
Some studies have compared the results of CESIs and surgery for cervical radiculopathy. Lee performed a prospective outcome study on 98 patients with cervical radiculopathy who were considered to be surgical candidates. All patients underwent a transforaminal and interlaminar cervical injection of steroid and local anesthetic. Seventy-nine of the patients (80.6%) avoided surgery at an average follow-up of 40.4 months after having undergone an average of 1.8 cervical injections (Group 1). Nineteen patients (19.4%) ultimately underwent surgery (Group 2). At final follow-up, there were no statistically significant differences in the Visual Analog Scale score for arm pain, the proportion of patients with a good or excellent Odom's criteria score, or the average Neck Disability Index between Groups 1 and 2 (Lee S H. Spine 2012; 37,12:1041-1047). Of note, however, statistically significant prognostic factors favoring surgery were previous episodes of cervical radiculopathy and greater intensity of arm pain before and after the cervical epidural steroid injection. There were no radiographic differences between the two groups, such as location of compression, grade of degeneration, and soft-to-hard disc ratio.

Items 2 and 3

The rationale for coverage of diagnostic selective nerve root blocks in patients with cervical radicular pain is that multilevel equivocal pathology may appear on cervical spine imaging studies. Positive findings on cervical MRI scans are known to occur in asymptomatic patients, and it is accepted that mechanical compression is not always associated with cervical radicular pain (Boden S D. J Bone Joint Surg Am 1990; 72: 1178-1184). Diagnostic cervical selective nerve root blocks provide additional information regarding the nerve root(s) responsible for the radicular pain.

Sasso and Macadeag analyzed results of diagnositic SNRBs in 101 patients who underwent lumbar or cervical decompression for radiculopathy and compared to surgical outcome 1 year postoperatively. A comparison of surgical outcomes was examined between magnetic resonance imaging (MRI) and SNRB results. Ninety-one percent of the patients with a positive SNRB had good surgical outcomes, versus 60% of the patients with a negative SNRB. Of the patients with a positive MRI result, 87% had good surgical outcomes, whereas a similar percentage of the patients with a negative MRI (85%) had good surgical outcomes When findings between SNRB and MRI differed (n = 20), surgery at the level consistent with the SNRB was more strongly associated with a good surgical outcome. Of the patients with a poor

surgical outcome, surgery was most often performed at a level inconsistent with the SNRB finding. They concluded that a diagnostic SNRB can safely and accurately discern the presence or absence of cervical or lumbar radicular pain. A diagnostic SNRB can dissuade surgeons from operating on an initially suspicious, but incorrect, level of radiculopathy. When MRI findings are equivocal, present at multiple levels, or discordant with the patient's symptoms, the result of a negative diagnostic SNRB is useful in predicting the absence of an offending (symptomatic) lesion. (Sasso RC, Macadaeg K, et al. J Spinal Disord Tech. 2005 Dec; 18(6):471-8).

Anderberg studied 30 consecutive patients with cervical radiculopathy and ipsilateral two-level MRI degeneration. Patients underwent diagnostic selective nerve blocks at both levels. Correlation between selective nerve root block results and the level with the most severe MRI degeneration was 60%. Correlation between the selective nerve root block results and the clinical findings was 28%. Twenty-two of the thirty patients were treated either surgically or with transforaminal epidural steroid injections on the basis of the diagnostic selective nerve root blocks. A good to excellent outcome was reported in 18 of the 22 treated patients (European Spine Journal 2006. 15; 6:794-801).

Diagnostic selective nerve root block may be considered to determine the association between unilateral headache and ipsilateral pain in the neck, shoulder, and arm (cervical radicular pain). A prospective cohort of 161 patients with cervical radicular pain and corresponding degenerative MRI changes occurring in association with ipsilateral unilateral headache underwent a diagnostic selective nerve root block. There was a significant correlation ($P< 0.0001$) between reduction of headache pain and cervical radiculopathy. Of the 161 patients, 93 had greater than 50% relief from their headache; and 61 had 100% relief from their headache (Lieselott C G. European Spine Journal 2007. 16:953-959).

The 2010 North American Spine Society Clinical Guidelines for The Diagnosis and Treatment of Cervical Radiculopathy from Degenerative Disorders recommends consideration of diagnostic selective nerve root blocks with specific dosing and technique protocols in the evaluation of patients with compressive lesions at multiple levels on imaging studies. Additionally, selective nerve root block may be considered to confirm a symptomatic level in patients with discordant clinical symptoms and imaging findings.

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Author Disclosures

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