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Review Article

Lumbar Epidural Steroid Injection in Elderly Patients: A Mini Review

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Abstract

Low back pain is an important health problem in elderly patients. Epidural steroid injection is an effective and reliable treatment method for patients with low back pain despite conservative treatment or in patients with comorbid diseases. It is a non-surgical treatment method that allows local anesthetic or steroid therapy to be delivered directly to the epidural space through interlaminar, caudal or transforaminal routes. It has been shown to be effective in elderly patients with lumbar disc herniation and lumbar spinal stenosis. However, there is no clear data on long-term effects. For this purpose, more randomized controlled and longer-term studies are needed.

Keywords: Epidural analgesia; Low back pain; Elderly; Injections.

Introduction

Low back pain is an important health problem in elderly patients. Its prevalence increases with age and varies between approximately 10-50%. However, low back pain is ignored in most elderly patients. Since spinal degeneration develops with advancing age, it causes many types of back pain. These include spinal stenosis, facet joint pain, discogenic pain, and disc herniation. In elderly patients, options for pain management decrease due to comorbid diseases and generally include conservative treatment, interventional procedures, and surgery [1].

Epidural Steroid Injection (ESI) is an effective and reliable treatment method for patients who have pain despite conservative treatment or in patients with comorbid diseases. It is a non-surgical treatment method that allows local anesthetic and steroid therapy to be delivered directly to the epidural space through various methods such as interlaminar, caudal and transforaminal routes. Its mechanism of action is mainly on anti-inflammatory, anti-edema and sustained membrane stability. ESI is considered a quick solution to relieve pain and improve quality of life [2]. There are few studies in the literature regarding ESI in elderly patients [3-6]. These studies generally had a small number of patients or were designed retrospectively. However, there is no clear data regarding which ESI method should be chosen and its frequency in elderly patients.

In this mini review, we will discuss lumbar ESI methods and their effectiveness in elderly patients.

Approach

Lumbar epidural steroid injections can be applied with interlaminar, transforaminal and caudal approaches.

Interlaminar

Interlaminar Epidural Steroid Injection (ILESI) is usually applied by passing the ligamentum flavum to the level of pathology using a tuohy needle. Midline, paramedian and parasaggital approaches can be used. The injectate usually spreads to the

posterior epidural area and it spreads to multiple levels. It has been shown to be an effective treatment for conditions that cause radicular pain, such as disc herniation and spinal stenosis, in patients of all age groups. It can be performed blindly or with the help of a radiological device such as fluoroscopy. Blind interalminar injection has been shown to be effective for an average of 6 months in elderly patients with lumbar spinal stenosis [6]. In a study conducted with fluoroscopy, it was shown that ILESI provided effective improvement in pain and functionality in patients with spinal stenosis at a 3-month follow-up [7]. In another study specifically looking at functional status, ILESI treatment improved physical capacity and pain scores in elderly patients with symptomatic lumbar spinal stenosis compared to the medical treatment group [8]. In contrast to studies with short-term follow-up, ILESI or Transforaminal Epidural Steroid Injections (TFESI) appear to be effective in older adults at a long-term follow-up of 24 months [9]. Apart from fluoroscopy and blind application, ILESI treatment has been shown to be safe and effective with Computed Tomography (CT) in elderly patients [10]. However, CT is not widely preferred due to its high cost and radiation. Additionally, access to CT is not possible in most clinics.

Patients with psychiatric illnesses such as depression or anxiety show worse performance during follow-up, regardless of the course of the disease. The fact that the patient does not benefit from the first application is a good criterion as he/she will not benefit from repeated doses [11]. Although ILESI is an effective treatment for elderly patients. There is no clear information about the frequency of ESI in elderly patients and how many times it should be performed per year.

Transforaminal

The difference between transforaminal epidural steroid injections and other epidural methods is that the injectate reaches the anterior epidural space. Thus, the medicine is given closer to the area where the pathology is located. Additionally, in cases of isolated root involvement, injectate can be given specifically to the pathological level. TFESI has been shown to reduce pain and depression in the treatment of disc herniation in elderly patients with radicular pain [12]. Because spinal stenosis is common in elderly patients, TFESI studies are more common in spinal stenosis than in disc herniation. In one of these studies, functional status as well as pain relief improved after TFESI in elderly patients with spinal stenosis [7]. In elderly patients with lumbar spinal stenosis, ILESI and TFESI treatments were found to be effective in relieving pain at a follow-up of up to one year [13].

Epidural steroid injections have been shown to be an effective treatment option after spinal stenosis, disc herniation, and postlaminectomy syndrome in elderly patients. It was found to be more successful in patients with disc herniation than in patients with spinal stenosis [3]. In elderly patients with chronic radicular pain, symptom duration was found to be a clinical parameter affecting the success of TFESI [14]. However, the paraspinal muscle diameter and spinopelvic parameters do not affect the success of TFESI treatment [15-17].

Caudal

Caudal Epidural Steroid Injection (CESI) is a frequently preferred treatment method in patients with lower level [18] and multi-level disc herniation [19]. It is a frequently preferred method because it is easy to perform, especially in patients who have undergone surgery and whose ligamentum flavum is not intact. It is frequently performed in the elderly with the support of fluoroscopy and ultrasound. Thanks to the increased use of ultrasound in recent years, it is preferred for pain relief and functional well-being in elderly patients. Another advantage is that it does not emit radiation [20]. CESI application with fluoroscopy has been performed safely for years. It can be applied safely in elderly patients with a narrow epidural space due to spinal stenosis [21]. CESI provides significant pain relief and appears to be a reasonable treatment option for elderly patients with spinal stenosis. This is an important treatment method for patients who respond poorly to conservative treatment and have a high surgical risk [21]. However, there is not enough information about application time and frequency.

Outcomes

Although epidural steroid injections are administered very frequently every year, their long-term effectiveness is still controversial. It is an effective treatment option when applied at the right time and to the right patient [22]. All three ESI methods (CESI, ILESI, and TFESI) have been shown to be effective. It has been found that treatment success is higher, especially in patients with disc herniation. This effect is thought to be due specifically to the steroid's anti-inflammatory effect [3]. When discussing the benefits of this procedure for back pain from a time perspective, most agree that it is beneficial. While some opinions state that it delays surgery thanks to its short and medium-term effectiveness, some opinions state that it eliminates the need for surgery [22]. Elderly people and people with comorbid diseases are generally referred for epidural procedures because of the fear of surgical complications. However, we do not have enough data on the number of ESIs performed.

Complications

Complications seen after ESI injections are as follows: increased pain, pain at the site of the injection, nerve or vascular injury, bleeding and epidural hematoma, dural puncture, local infection and epidural abscess, brain and spinal cord infarctions, paralysis, vertebral osteomyelitis, iatrogenic cushing syndrome, adrenal insufficiency, flushing, hyperglycemia, abnormal uterine bleeding, and embolism formation, especially with a vascular puncture when using the non-particulate steroid [22,23].

Although there are not many studies on the complications of epidural steroid injections in elderly patients, major complication such as death have not been reported [3]. In one study, no complications were observed in any of the 688 CT-guided ESI procedures performed in patients over 65 years of age [24]. Whereas, in a case report, it was reported that paraplegia developed in an 83-year-old patient who underwent L3-4 TFESI with fluoroscope and in two 79-year-old patients who underwent L3-4 TFESI with CT. It is thought that paraplegia develops secondary to spinal cord infarction [25]. It has been stated in the literature that an elderly patient developed an epidural abscess with an atypical pathogen after epidural steroid treatment [26]. It is also known that mania developed in an elderly patient after ESI and that this patient had no history of psychiatric ill-

ness [27]. Dural puncture and subsequent pneumocephalus developed in elderly patients after ILESI. These patients developed occipital and temporal headaches. Well-being was achieved with conservative treatment [28]. Some studies state that ESI application poses a risk for osteoporosis and increases the risk of fracture [29]. However, another study supports the opposite view, stating that up to a certain dose of steroids, it does not increase the risk of fracture [30].

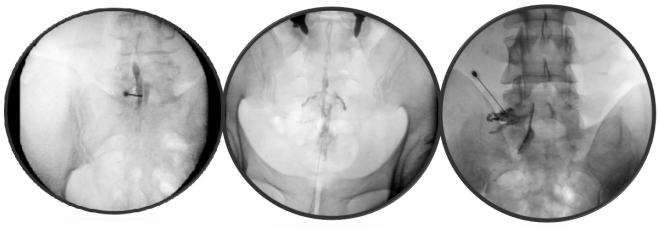

Figure 1: Interlaminar, caudal and transforaminal epidural steroid injection, respectively

Conclusion

Epidural steroid injection in elderly patients is an effective and safe method in many conditions that cause radiculopathy. However, we do not have clear data about its long-term effects. For this purpose, more randomized controlled and long-term studies are needed.

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