THE EFFICACY OF EPIDURAL STEROID INJECTIONS IN THE MANAGEMENT OF PATIENTS WITH LUMBOSACRAL DEGENERATIVE SPINE DISEASES

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ABSTRACT

BACKGROUND

Degenerative diseases of the lumbosacral region are becoming a more frequent presentation to the clinician, particularly with the increasing ageing population worldwide. These conditions result in impingement of the nerve roots and inflammation, causing radiculopathy along the course of the affected nerve root. Epidural steroid injections are commonly employed to alleviate the radiculopathy when the use of conservative methods of treatment have failed.

The objective of the study was to determine the efficacy of this treatment modality in our setting.

MATERIALS AND METHODS

This study was an observational study carried out at the Jos University Teaching Hospital, Nigeria. Patients who had epidural steroids within one-year period (July 2016 - June 2017), who were being managed for degenerative spine disease of the lumbosacral region were included in the study. The data was obtained from the case records of the patients. Epidural steroids were administered under sterile conditions. 80 mg of Methylprednisolone was used with 3 mL of 1% lignocaine. This was administered via the interlaminar route to the epidural space. The patients' responses were assessed using the numeric pain scale (11-point scale from 10 to 0). Data was analysed using Statistical Package for Social Sciences (SPSS). Pain before the procedure, pain after the procedure and the pain differential on the scale were assessed as well as complications. The paired t-test was used to analyse the mean pain scores at 95% confidence interval and a p-value < 0.05 was considered statistically significant.

RESULTS

A total of 34 patients were involved in the study. 11 males and 23 females with a male: female ratio of 1: 2.1. The ages of the patients ranged from 20 to 80 years with a mean age of 57.2. The pathologies were disc degeneration and herniation 21 (61.8%), degenerative spondylolisthesis 6 (17.5%), spinal canal stenosis 4 (11.8%) and prolapsed intervertebral disc 3 (8.8%). The mean score before the procedure was 8.8 ± 0.81 ; 6 (17.6%) patients scored 10, 17 (50%) scored 9, 9 (26.5%) scored 8 and 2 (5.9%) scored 7. Mean pain scores after the procedure was 2.2 ± 1.34 ; 14 (41.2%) patients scored 1, 9 (26.5%) scored 2, 5 (14.7%) scored 3, 4 (11.8%) scored 4 and 1 each (2.9%) scored 5 and 6; 31 (85.3%) patients had a reduction by 50% or more in their pain scores. A statistically significant difference ($t = 25.09$; $p < 0.000$ at 95% confidence interval) was observed between the mean pain scores before and after epidural steroid injection.

CONCLUSION

Epidural steroid injections are a safe and effective method of treating patients with radiculopathy from lumbosacral degenerative spine diseases.

KEY WORDS

Epidural, Steroid, Injection, Lumbosacral, Spine.

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BACKGROUND

Degenerative spine diseases are a group of degenerative conditions in the lumbosacral region ranging from intervertebral disc degeneration, which can be single or multiple and may be associated with disc herniation into the spinal canal, spinal canal stenosis, degenerative spondylolisthesis, hypertrophy of the ligamentum flavum, facet joint arthritis and degenerative lumbosacral scoliosis amongst others.⁽¹⁾ These conditions may be associated with instability of the lumbosacral spine. The effects of these pathologies is that they result in an impingement of the neurological structures with resultant inflammation.⁽²⁾ The individuals so affected present with radiculopathies along the

distribution of the nerves. Pain is the most worrisome presentation and can be debilitating in some instances. Spinal claudication and a gradual loss in motor and sensory functions depending on the degree and extent of the impingement may also be present.

These conditions affect typically people in the 5th decade of life and above increasing in frequency as age progressed.^(3,4) With improved health care modalities, there is an increasing ageing population in Nigeria and the world generally. More people in this age bracket result in an increased frequency of these degenerative conditions presenting to the clinician. Many modalities are employed in the treatment of these conditions and they include postural modification, physiotherapy, drug management, epidural steroids and surgical interventions.^(1,3,5,6) These treatment options are administered alone or in combination, with the goal of reducing or eliminating the pain, other radicular symptoms and improving function. Epidural steroid injections are used with the aim of reducing the inflammation of the neural structures which may serve to reduce the oedema around the nerves and reduce the degree of impingement on them.⁽⁷⁻¹²⁾ This modality of treatment is usually used when other conservative methods of treatment have yielded suboptimal results or in combination with other non-operative modalities.^(13,14) In some instances, steroid injections may be used post-operatively in patients with persistent radicular pain following surgery.^(15,16) It can also be employed while awaiting surgical procedures to relieve pain and ameliorate other symptoms in Nigeria where the availability of spine surgical services is not as wide spread as desired and with the high cost of these services which may be out of reach for quite a number of indigent patients, epidural steroids can be employed while awaiting surgery and is also used to relieve symptomatology in combination with other non-operative treatment procedures in patients who may not be fit to undergo surgery. The objective of the study was to determine the efficacy of this treatment modality in our setting.

MATERIALS AND METHODS

This study was an observational study carried out at the Jos University Teaching Hospital, Nigeria. Patients who had epidural steroids within one-year period (July 2016 - June 2017) who were being managed for degenerative spine disease of the lumbosacral region were included in the study. The data was obtained from the case records of the patients. Epidural steroids were administered under sterile conditions. 80 mg of Methylprednisolone was used with 3 mL of 1% lignocaine. This was administered via the interlaminar route to the epidural space. The patients' responses were assessed using the numeric pain scale (11-point scale from 10 to 0). Data was analysed using Statistical Package for Social Sciences (SPSS). Pain before the procedure, pain after the procedure and the pain differential on the scale were assessed as well as complications. The paired T-test was used to analyse the mean pain scores at 95% confidence interval and a p-value < 0.05 was considered statistically significant.

RESULTS

A total of 34 patients were involved in the study. 11 males and 23 females with a male: female ratio of 1: 2.1. The ages of the patients ranged from 20 to 80 years with a mean age of 57.2. The pathologies were disc degeneration and herniation 21 (61.8%), degenerative spondylolisthesis 6 (17.5%), spinal canal stenosis 4 (11.8%) and prolapsed intervertebral disc 3 (8.8%), Figure 1. Pain scores before the procedure: 6 (17.6%) patients scored 10, 17 (50%) scored 9, 9 (26.5%) scored 8 and 2 (5.9%) scored 7 on the numeric pain scale with a mean pain score of 8.8 ± 0.81 , Table 1. Pain scores after the procedure: 14 (41.2%) of patients scored 1, 9 (26.5%) scored 2, 5 (14.7%) scored 3, 4 (11.8%) scored 4 and 1 each (2.9%) scored 5 and 6. With a mean pain score following the procedure being 2.2 ± 1.34 , Table 2. 28 (76.5%) patients had a pain score reduction of 6 points or more, Table 3. 31 (83.5%) of the patients had a reduction in pain score of more than 50%. A statistically significant difference ($t = 25.09$; $p < 0.000$ at 95% confidence interval) was observed between the mean pain scores before and after epidural steroid injection.

Figure 1. Pathologies treated with Epidural Steroid Injections

Pain Score	No. of Patients	Percentage %
7	2	5.9
8	9	26.5
9	17	50.0
10	6	17.6
Total	34	100

Table 2. Pain Scores before Epidural Steroid

Pain Score	No. of Patients	Percentage %
1	14	41.2
2	9	26.5
3	5	14.7
4	4	11.8
5	1	2.9
6	1	2.9
Total	34	100

Table 3. Pain Scores after Epidural Steroid

Points of Reduction	No. of Patients	%
2	1	2.9
3	1	2.9
4	3	8.8
5	3	8.8
6	6	17.6
7	11	32.4
8	5	14.7
9	4	11.8
Total	34	100

Table 4. Degree of Reduction in Pain

Mean Pain Score Before	Mean Pain Score After	Paired T-Test	df	P-value
8.8 ± 0.81	2.2 ± 1.34	25.09	33	0.000

Table 5. Pain Score comparison before and after Epidural Steroid Injection

DISCUSSION

From the above study, the mean age was 57.2 years. This was similar to the age range reported by Jorgensen and colleagues⁽¹⁴⁾ who had a median age of 51 years and Kobayashi et al who found an ever increasing age of degenerative diseases of the spine from 54.6 to 63.7 years over a 10-year period,⁽³⁾ indicating an increasing age of this condition which may also point to the ever increasing age of populations worldwide. This further buttresses the increasing age where these pathologies present and can be ascribed to improved health care with consequent increased longevity.

The commonest condition for which epidural steroids were administered were for disc degeneration and herniation, which formed 61.9% of the patient population. The other conditions of degenerative spondylolisthesis and spinal canal stenosis were 17.6% and 11.8% respectively. The above conditions typically occur with increasing age. Prolapsed intervertebral disc only was noticed in 8.8% of the patients and this occurred amongst younger patients.

32 (94.1%) patients had a pain score of above 8 before the epidural steroid injection administration with a mean value of 8.8. Only 2 (5.9%) patients had a pain score below 8 indicating great degree of discomfort before the procedure. Following the procedure, there was a marked reduction in the pain scores with 28 (82.4%) patients having a pain score of 3 and below with a mean score of 2.2 following epidural steroid injection. There was a statistical difference in mean pain scores before and after epidural steroid injection. Rados et al in their study found a pain reduction by 50% or more in 53% of the patients who had epidural steroid injections.⁽¹⁰⁾ In the study by Manchikanti and colleagues,⁽¹¹⁾ 86% of patients had a reduction in pain by 50% or more following epidural steroid injection.

In our study, 28 (76.5%) of the patients treated with epidural steroid injection had a pain score reduction by 6 or more points with 31 (85.3%) of our patients having a reduction of 50% and more in their pain scores. This shows an appreciable improvement in the pain score after epidural steroid injection.

We had no complications in our study as complications following epidural steroid injections are rare. However, complications though rare can occur and can be devastating. Examples are epidural haematoma and spinal infarction leading to paralysis as reported by some authors.^(17,18)

CONCLUSION

Epidural steroid injections are a safe and effective method of treating patients with radiculopathy from degenerative spine diseases.

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