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Original article

Combined Transforaminal and Caudal Epidural Injection for Lumbar Radicular Pain: A Retrospective Comparative Study

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Abstract

Epidural and periradicular injections are commonly used in the nonoperative management of lumbar radicular pain. However, the clinical durability of a combined transforaminal nerve root injection and caudal epidural injection strategy may vary according to the underlying pathology. This study evaluated the outcomes of this combined approach in patients with isolated lumbar disc herniation and in patients with degenerative disc disease accompanied by additional degenerative spinal pathologies.

Methods. This retrospective comparative study included 48 patients with lumbar radicular pain who underwent combined transforaminal nerve root injection and caudal epidural injection under sedation. Patients were divided into a disc herniation group (H group, n=21) and a degenerative group (D group, n=27). Pain and disability were assessed using the visual analog scale (VAS) and Oswestry Disability Index (ODI) at baseline, postoperative day 1, week 1, month 1, month 3, month 6, and month 12.

Results. Both groups showed significant early improvement in VAS and ODI scores after the procedure. Baseline VAS and ODI scores were comparable between groups, whereas the D group was significantly older. In the H group, the early clinical improvement was largely maintained through 12 months. In contrast, the D group demonstrated attenuation of treatment effect, particularly after month 6, with significantly worse ODI and VAS scores than the H group at later follow-up. Nevertheless, both groups remained significantly improved compared with baseline throughout follow-up.

Conclusions. Combined transforaminal nerve root and caudal epidural injection appears to provide meaningful early pain relief and functional improvement in lumbar radicular pain. The benefit seems more durable in younger patients with isolated disc herniation, whereas in older patients with greater degenerative burden, the effect may diminish over time but still remain clinically meaningful. This approach may represent a valuable nonoperative option in selected patients without a definite surgical indication.

Keywords: Lumbar disc herniation, degenerative spinal disease, spinal injection, caudal block, nerve root block.

1. Introduction

Lumbar radicular pain is one of the most common and clinically challenging spinal disorders encountered in daily practice. Although lumbar disc herniation is a well-established cause of sciatica, degenerative disc disease accompanied by additional degenerative spinal pathologies, such as foraminal stenosis, lateral recess narrowing, facet arthropathy, and degenerative instability, may also produce persistent radicular symptoms. Moreover, degenerative imaging findings increase substantially with age even in asymptomatic individuals, making careful clinicoradiological correlation essential, particularly in older patients [1-3].

Epidural steroid injections remain widely used in the nonoperative management of lumbosacral radicular pain. Current evidence suggests that epidural corticosteroid injections may provide short-term reductions in pain and disability, particularly in patients with radiculopathy; however, the magnitude and durability of benefit remain variable across patient populations, and sustained long-term superiority has not been consistently demonstrated [4,5].

Among epidural techniques, the transforaminal approach allows relatively selective delivery of medication to the affected nerve root, whereas the caudal route may provide broader epidural spread and may be appealing in patients with multilevel degenerative pathology. Nonetheless, the literature has predominantly evaluated these approaches either individually or comparatively, and data on the clinical outcomes of a same-session combined transforaminal nerve root injection and caudal epidural injection strategy remain limited. In addition, treatment response may vary according to the underlying pathology burden; patients with degenerative lumbar disease and concomitant structural degeneration may experience less durable benefit than patients with isolated disc herniation [6-10].

The aim of the present study was to evaluate the clinical outcomes of combined transforaminal nerve root injection and caudal epidural injection performed under sedation and to compare the results between two clinical subgroups: patients with lumbar disc herniation (H group) and patients with degenerative disc disease accompanied by additional degenerative spinal pathologies (D group). We hypothesized that both groups would demonstrate marked early improvement in pain and disability, whereas sustained long-term benefit would be more pronounced in the disc herniation group.

2. Materials and methods

Study design

This study was designed as a single-center, retrospective, comparative cohort study and was reported in accordance with the STROBE recommendations for observational studies [11].

Patient selection and grouping

Institutional clinical records were retrospectively reviewed. A total of 48 patients with lumbar radicular pain who underwent combined transforaminal nerve root injection and caudal epidural injection under sedation and who had available clinical follow-up data at baseline, postoperative day 1, week 1, month 1, month 3, month 6, and month 12 were included in the analysis. Patients were divided into two groups according to the predominant underlying pathology. The H group consisted of patients with lumbar disc herniation, whereas the D group consisted of patients with degenerative disc disease accompanied by additional degenerative spinal pathologies. According to the source file, 21 patients were classified into the H group and 27 into the D group. Because the groups were not homogeneous with respect to age and concomitant degenerative pathology burden, between-group comparisons were interpreted as exploratory rather than as direct superiority analyses.

Intervention protocol

All patients underwent combined transforaminal nerve root injection and caudal epidural injection under sedation. Following the procedure, same-day mobilization was encouraged, and an early lumbar exercise program, particularly emphasizing pelvic tilt-based exercises, was initiated. Accordingly, the observed clinical outcomes should be interpreted in the context of a multimodal nonoperative treatment pathway rather than as the isolated effect of injection alone. (Fluoroscopic guidance details, target level selection, needle type, steroid agent, local anesthetic agent, injectate volume, and technical steps to be inserted).

Outcome measures

Pain intensity was assessed using the visual analog scale (VAS), and functional disability was assessed using the Oswestry Disability Index (ODI). The ODI is one of the most widely used condition-specific disability instruments for spinal disorders, and the Turkish version has been validated for patients with low back pain [12,13]. The VAS is also a widely accepted patient-reported outcome measure for pain intensity assessment [14]. Both outcomes were recorded at baseline and at postoperative day 1, week 1, month 1, month 3, month 6, and month 12.

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Statistical analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY, USA). Continuous variables were presented as mean ± standard deviation or median and interquartile range, as appropriate, and categorical variables were presented as counts. Between-group comparisons of continuous variables were performed using the Mann-Whitney U test, whereas categorical variables were analyzed using the chi-square test or Fisher's exact test, as appropriate. Within-group changes over time were evaluated using the Friedman test. Pairwise comparisons between baseline and each follow-up time point were performed using the Wilcoxon signed-rank test. A two-sided p value of <0.05 was considered statistically significant. Because no correction for multiple comparisons was applied to the pairwise analyses, these comparisons were interpreted as exploratory. The nonparametric framework was preferred because of the limited sample size and the possibility that VAS and ODI data did not fully satisfy parametric assumptions.

3. Results

Baseline characteristics

A total of 48 patients were included in the final analysis, comprising 21 patients in the H group and 27 patients in the D group. Baseline demographic and clinical characteristics are summarized in Table 1. The D group was significantly older than the H group (65.6 ± 6.5 years vs 41.5 ± 11.4 years, p<0.001). In contrast, sex distribution (male/female: 15/12 vs 13/8, p=0.771), side of symptoms (right/left: 13/14 vs 10/11, p=1.000), and lumbar level distribution (L2/L3/L4/L5: 1/9/9/8 vs 1/6/7/7, p=0.982) were comparable between groups. Baseline ODI (56.4 ± 7.7 vs 52.2 ± 6.6, p=0.087) and baseline VAS (6.7 ± 1.1 vs 7.2 ± 0.9, p=0.112) were also similar between groups, indicating comparable pretreatment symptom severity despite a marked age imbalance.

Table 1 - Demographic and Baseline Clinical Characteristics

Variable	Group H (Disc herniation, n=21)	Group D (Degenerative disc disease, n=27)	p value
Number of patients, n	21	27	-
Age, years	41.5 ± 11.4	65.6 ± 6.5	<0.001
Sex, male/female	13/8	15/12	0.771
Side, right/left	10/11	13/14	1.000
Lumbar level, L2/L3/L4/L5	1/6/7/7	1/9/9/8	0.982
Pre-procedure ODI	52.2 ± 6.6	56.4 ± 7.7	0.087
Pre-procedure VAS	7.2 ± 0.9	6.7 ± 1.1	0.112

ODI: Oswestry Disability Index; VAS: Visual Analog Scale; L: Lumbar; SD: standard deviation

ODI outcomes

Changes in ODI scores over time are presented in Table 2. Both groups demonstrated a significant time effect on Friedman analysis (p<0.001 for both groups). In the H group, the mean ODI decreased from 52.2 ± 6.6 at baseline to 7.2 ± 3.4 on postoperative day 1 and remained low throughout follow-up, reaching 4.7 ± 2.0 at 12 months. In the D group, the mean ODI decreased from 56.4 ± 7.7 at baseline to 10.4 ± 3.6 on postoperative day 1, indicating substantial early functional improvement; however, ODI values progressively increased during follow-up, reaching 28.2 ± 12.7 at 6 months and 32.6 ± 14.0 at 12 months. Between-group differences in ODI became statistically significant from postoperative day 1 onward (p=0.005 on day 1) and remained highly significant at all subsequent follow-up visits (all p<0.001 after week 1), favoring the H group. Overall, these findings suggest that early functional recovery occurred in both groups, whereas the durability of benefit was clearly greater in patients with disc herniation.

Table 2 - Changes in ODI Scores Over Time and Between-Group Comparison

Time point	Group H, mean ± SD	Group D, mean ± SD	p value
Pre-procedure	52.2 ± 6.6	56.4 ± 7.7	0.087
Day 1	7.2 ± 3.4	10.4 ± 3.6	0.005
Week 1	6.9 ± 2.7	11.4 ± 3.5	<0.001
Month 1	6.6 ± 2.5	18.0 ± 6.3	<0.001
Month 3	6.2 ± 2.0	18.3 ± 6.1	<0.001
Month 6	5.9 ± 2.1	28.2 ± 12.7	<0.001
Month 12	4.7 ± 2.0	32.6 ± 14.0	<0.001
Intra-group Friedman test	<0.001	<0.001	-

ODI: Oswestry Disability Index; SD: standard deviation

VAS outcomes

Changes in VAS scores over time are shown in Table 3. A significant time effect was observed in both groups on Friedman analysis (p<0.001 for both groups). In the H group, the mean VAS decreased from 7.2 ± 0.9 at baseline to 0.6 ± 0.5 on postoperative day 1 and remained stable thereafter, measuring 1.1 ± 0.6 at both 6 and 12 months. In the D group, the mean VAS decreased from 6.7 ± 1.1 at baseline to 0.9 ± 0.8 on postoperative day 1 and remained low through the first month; however, scores gradually increased thereafter, reaching 2.0 ± 1.1 at 3 months, 4.3 ± 1.8 at 6 months, and 4.9 ± 1.3 at 12 months. Between-group differences in VAS were not significant at baseline, postoperative day 1, or week 1 (p=0.112, p=0.119, and p=0.663, respectively), but became significant from month 1 onward (p=0.008 at month 1; p<0.001 at months 3, 6, and 12), again favoring the H group. These data indicate that the initial analgesic response was substantial in both groups, but long-term pain control was maintained more effectively in the H group.

Table 3 - Changes in VAS Scores Over Time and Between-Group Comparison

Time point	Group H, mean ± SD	Group D, mean ± SD	p value
Pre-procedure	7.2 ± 0.9	6.7 ± 1.1	0.112
Day 1	0.6 ± 0.5	0.9 ± 0.8	0.119
Week 1	0.8 ± 0.4	0.9 ± 0.8	0.663
Month 1	0.8 ± 0.4	1.4 ± 0.9	0.008
Month 3	1.1 ± 0.7	2.0 ± 1.1	<0.001
Month 6	1.1 ± 0.6	4.3 ± 1.8	<0.001
Month 12	1.1 ± 0.6	4.9 ± 1.3	<0.001
Intra-group Friedman test	<0.001	<0.001	-

VAS: Visual Analog Scale; SD: standard deviation

Pairwise comparisons versus baseline

Pairwise within-group comparisons relative to baseline are summarized in Table 4. In both groups, ODI and VAS scores at every follow-up time point were significantly lower than baseline values on Wilcoxon signed-rank testing (all p<0.001). However, interpretation of these results requires caution. Although both groups retained statistically significant improvement relative to baseline throughout follow-up, the absolute score trajectories showed clear divergence between groups. In the H group, both disability and pain improvement were largely sustained through 12 months. In contrast, the D group exhibited progressive worsening after the early post-procedural period, particularly from 6 months onward, suggesting attenuation of treatment effect over time. Because no adjustment for multiple comparisons was performed, the analyses in Table 4 should be regarded as exploratory.

Table 4 - Within-Group Pairwise Comparisons Versus Baseline (Wilcoxon Signed-Rank Test)

Follow-up time	Group H ODI p	Group D ODI p	Group H VAS p	Group D VAS p
Day 1	<0.001	<0.001	<0.001	<0.001
Week 1	<0.001	<0.001	<0.001	<0.001
Month 1	<0.001	<0.001	<0.001	<0.001
Month 3	<0.001	<0.001	<0.001	<0.001
Month 6	<0.001	<0.001	<0.001	<0.001
Month 12	<0.001	<0.001	<0.001	<0.001

ODI: Oswestry Disability Index; VAS: Visual Analog Scale

4. Discussion

The most important finding of the present study is that the combined use of transforaminal nerve root injection and caudal epidural injection performed under sedation was associated with marked early reductions in pain and disability in both the disc herniation group and the group with degenerative disc disease accompanied by additional degenerative spinal pathologies. However, the mid- and long-term clinical course diverged between the two groups. In the H group, the improvements in ODI and VAS achieved in the early post-procedural period were largely maintained through month 12, whereas in the D group, the initial response appeared to diminish particularly after month 6 and became more pronounced by month 12. Nevertheless, statistically significant improvement compared with baseline persisted at all follow-up time points even in the D group; therefore, the observed pattern should not be interpreted as complete treatment failure, but rather as a gradual attenuation of clinical efficacy over time. This distinction is important and should be clearly emphasized when interpreting the findings.

The pattern of early improvement observed in our study is consistent with the literature indicating that transforaminal and epidural injections can provide short- to mid-term symptom control, particularly in patients with radicular pain. Contemporary systematic reviews have shown that lumbar transforaminal steroid injections have a stronger evidence base in radicular pain secondary to disc herniation, whereas the evidence for efficacy in spinal stenosis or more complex degenerative pathologies is more heterogeneous and relatively weaker [7]. In addition, lumbar spinal stenosis is well recognized as a common condition in older adults and one that is often managed nonoperatively at the initial stage in many patients [15]. Within this framework, the similarly robust early analgesic and functional response observed in both groups in our series is not unexpected; the key differentiating issue is that the durability of this response appears to vary according to the nature of the underlying pathology.

The most plausible explanation for the deterioration observed in the D group at months 6 and 12 is the substantially older age of this group and their greater degenerative burden. Indeed, although baseline VAS and ODI scores were comparable between the two groups, the mean age was clearly higher in the D group; moreover, by definition, these patients had not only degenerative disc disease but also additional concomitant degenerative spinal pathologies. Therefore, the late deterioration seen in the D group is more appropriately explained not simply as a "loss" of injection effect, but rather in the context of progressive degenerative biology, multiple pain generators, possible canal and/or foraminal stenosis, facet-related pathology, and segmental instability. In the 641-case series by Kanayama et al., periradicular injections were also shown to be beneficial in degenerative lumbar pathologies, although outcomes were more limited in certain combined or more complex degenerative subtypes [10]. Accordingly, the 6- to 12-month pattern observed in our D group is not inconsistent with the literature; on the contrary, it may be regarded as an expected pattern of clinical attenuation in an older population with more complex degenerative spinal disease.

Even so, the late worsening in the D group should not be interpreted as "complete deterioration" or "treatment failure." As shown in Table 4, both ODI and VAS values remained significantly better than baseline at all follow-up time points, including months 6 and 12. This finding supports the view that, particularly in older patients with multiple degenerative spinal pathologies who do not have a definite surgical indication or who are unwilling to undergo surgery, injection therapy may be considered not as a curative treatment, but as a symptom-modifying and time-gaining option. The literature likewise indicates that injection therapy may provide meaningful pain

reduction in elderly patients with degenerative stenosis, and that caudal epidural blocks may represent a reasonable option especially in older patients with high surgical risk or those who decline surgery [16,17]. In addition, a randomized controlled study demonstrated that epidural steroid injections in patients with spinal stenosis could be effective for pain and function for up to 6 months [18]. Therefore, our findings in the D group generate a clinically relevant signal supporting re-evaluation during the 6- to 12-month period in elderly patients with degenerative spinal disease and consideration of repeat interventional treatment in selected cases.

The more durable response observed in the H group may be explained by the expectation that, in younger patients with isolated disc herniation and likely a lower structural degenerative burden, the inflammatory and mechanical components at the level of the affected nerve root are more responsive to injection therapy. This interpretation is consistent with comprehensive reviews reporting strong efficacy of transforaminal injections in radicular pain caused by disc herniation [7]. Furthermore, some clinical series have shown that transforaminal injections in patients with disc herniation can meaningfully contribute to avoiding surgery and may even reduce the need for surgical intervention in selected patients [19]. Long-term follow-up studies have demonstrated that, even in the disc herniation group, symptom recurrence is not completely eliminated; nevertheless, current pain levels, opioid use, and the need for additional interventions may remain relatively limited [20]. Therefore, rather than describing the findings in the H group as a "permanent cure," it would be more appropriate to state that, in carefully selected patients with isolated disc herniation and no definite surgical indication, the combined injection approach may represent an effective nonoperative option capable of providing sustained symptom control.

Another important aspect of our study is that the applied treatment was not limited to injection alone. All patients underwent the combined intervention under sedation, were mobilized on the same day, and were started on an early exercise program particularly emphasizing pelvic tilt-based exercises. Therefore, the clinical improvement observed was likely related not only to the injectate itself, but also to a multimodal nonoperative treatment protocol. Indeed, the literature has shown that exercise and physical therapy programs may also provide functional benefit, particularly in patients with degenerative stenosis [18]. From this perspective, the message of our study should be interpreted as follows: combined transforaminal plus caudal epidural injection may provide clinical benefit when applied together with early mobilization and exercise; however, the present data do not allow the independent contribution of each component of this combination to be determined.

Although our findings in the D group suggest a decline in efficacy after month 6, it would not be appropriate to derive an automatic "every 6 months" or "every 12 months" injection schedule from these results. There are studies in the literature indicating that repeat injections may restore part or most of the previous benefit in recurrent radicular pain [21,22]. However, high-level evidence regarding the optimal timing and frequency of repeat injections remains limited, and a published review has explicitly stated that there is insufficient evidence to support fixed serial injection regimens [23]. Therefore, it would be more appropriate to state that clinical re-evaluation during months 6 to 12 in the D group, and individualized consideration of repeat injection in symptomatic patients, may be reasonable; however, this should not be interpreted as a protocol recommendation arising directly from the present study.

Limitations of the Study

This study has several important limitations. First, it is retrospective in design and includes a limited sample size; therefore, the findings should be regarded as hypothesis-generating. Second, the groups were not randomized, and there was a marked imbalance particularly with respect to age; the older age and greater degenerative burden of the D group may have acted as important confounding factors affecting long-term outcomes. Third, because the study included only patients who underwent combined transforaminal nerve root injection and caudal epidural injection, direct comparison with transforaminal injection alone, caudal injection alone, or conservative treatment alone was not possible. Accordingly, the present data do not prove any synergistic superiority of the combined approach; rather, they demonstrate the clinical outcomes of this combined protocol and the differing courses observed in two patient subgroups.

Fourth, although the application of early mobilization and an exercise program in all patients is a clinical strength, it also precludes isolation of the pure effect of the injection itself. Finally, although the 12-month follow-up is clinically valuable, longer-term follow-up is required to assess recurrence rates in the disc herniation group and the rates of repeat intervention or progression to surgery in the degenerative group.

5. Conclusion

The combined use of transforaminal nerve root injection and caudal epidural injection under sedation appears to be associated with marked early reductions in pain and disability in both patients with isolated disc herniation and patients with degenerative disc disease accompanied by additional degenerative spinal pathologies. However, the durability of the clinical response differs between the two groups: in younger patients with isolated disc herniation, the benefit is largely maintained through month 12, whereas in older patients with a greater degenerative burden, the treatment effect tends to decline particularly after month 6.

Therefore, in older patients with degenerative spinal disease who do not have a definite surgical indication or who do not prefer surgery, this approach may be considered not as a curative treatment, but rather as a meaningful, although gradually attenuating, nonoperative method of symptom control. In contrast, in selected younger patients with isolated disc herniation, the combined injection approach may represent an effective option capable of providing more durable clinical improvement. Nevertheless, these findings should be interpreted with caution because of the retrospective and uncontrolled design, and the need for future, preferably prospective, comparative studies balanced for age and pathology burden should be clearly emphasized.

Conflicts of Interest. The authors declare no conflicts of interest.

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Availability of Data and Materials. The data used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Ethics Approval and Consent to Participate. Ethics committee approval was obtained for this study. Informed consent was obtained from all patients included in the study.

Clinical Trial Number. Not Applicable.

Author Contributions. Conceptualization – A.C.B.; Data analysis – A.C.B., H.G.; Writing -original draft – A.C.B.; Writing - review and editing – A.C.B., H.G. All authors read and approved the final version of the manuscript.

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Бел омыртқасының ауырсынуына арналған трансфораминалды және каудальды эпидуралды инъекцияның біріктірілген нұсқасы: Ретроспективті салыстырмалы зерттеу

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Түйіндеме

Эпидуралды және перирадикулярлы инъекциялар белдің төменгі бөлігіндегі радикулярлы ауырсынуды консервативті емдеуде кеңінен қолданылады. Дегенмен, жүйке түбіршегінің трансфораминалды және каудальды эпидуралды инъекцияның біріктірілген стратегиясының клиникалық тиімділігі негізгі патологияға байланысты да әртүрлі болуы ықтимал. Бұл зерттеуде бел омыртқасы дискісінің жарығы және дегенерациялық ауруы бар, қосымша дегенеративті омыртқа патологияларымен қатар жүретін науқастардағы аталмыш біріктірілген тәсілдің нәтижелері бағаланды.

Әдістер. Бұл ретроспективті салыстырмалы зерттеуге седация үстінде жүйке түбіршегінің біріктірілген трансфораминалды және каудальды эпидуралды инъекциясы жасалған, белдің төменгі бөлігінің радикулярлы ауырсынуы бар 48 науқас қатысты. Науқастар дискі жарығы бар (H тобы, n=21) және дегенеративті өзгерістері бар (D тобы, n=27) екі топқа бөлінді. Ауырсыну мен жұмысқа қабілетсіздік бастапқы кезеңде, отадан кейінгі 1-ші күні, 1-ші аптада, 1-ші айда, 3-ші айда, 6-шы айда және 12-ші айда визуалды аналогтық шкала (VAS) және Освестри мүгедектік индексі (ағылш.: Oswestry Disability Index, ODI) қолдану арқылы бағаланды.

Нәтижелері. Екі топта да процедурадан кейін ВАШ және ODI көрсеткіштерінде айтарлықтай ерте жақсарулар байқалды. Бастапқы ВАШ және ODI көрсеткіштері топтар арасында салыстырмалы түрде ұқсас болды, дегенмен D тобында айтарлықтай жоғары екені байқалды. H тобында ерте клиникалық жақсару негізінен 12 ай бойына сақталды. Керісінше, D тобында емдеудің әсері, әсіресе 6 айдан кейін төмендеді, кейінгі бақылауда H тобына қарағанда ODI және ВАШ көрсеткіштері айтарлықтай нашарлады. Дегенмен, екі топ та барлық бақылау кезеңінде бастапқы деңгейден айтарлықтай жақсару нәтижелері байқалды.

Қорытынды. Жүйке түбіршегіне біріктірілген трансфораминалды және каудальды эпидуралды инъекция белдің радикулярлық ауырсынуы кезінде ерте ауырсыну сезімін басатыны және функционалды жақсаруды қамтамасыз ететіні байқалады. Оң әсер дисктің оқшауланған жарығы бар жас науқастарда көбірек сақталды, ал күрделі дегенеративті өзгерістері бар егде жастағы науқастарда емнің әсер етуі уақыт өте келе төмендеуі мүмкін, бірақ клиникалық тұрғыдан маңызды болып қала береді. Бұл тәсіл хирургиялық араласуға нақты көрсеткіштері жоқ іріктелген науқастар тобында хирургиялық емес емдеудің құнды нұсқасы ретінде ұсынылуы мүмкін.

Түйін сөздер: бел дискісінің жарығы, омыртқаның дегенерациялық ауруы, жұлын инъекциясы, каудальды блокада, жүйке түбіршегінің блокадасы.

Комбинированная трансфораминальная и каудальная эпидуральная инъекция при поясничной радикулярной боли: Ретроспективное сравнительное исследование

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Резюме

Эпидуральные и перирадикулярные инъекции широко используются при консервативном лечении поясничной корешковой боли. Однако клиническая эффективность комбинированной стратегии трансфораминальной инъекции нервных корешков и каудальной эпидуральной инъекции может варьироваться в зависимости от основной патологии. В данном исследовании оценивались результаты этого комбинированного подхода у пациентов с изолированной грыжей поясничного диска и с дегенеративным заболеванием дисков, сопровождающимся дополнительными дегенеративными патологиями позвоночника.

Методы. В данное ретроспективное сравнительное исследование были включены 48 пациентов с поясничной корешковой болью, которым была проведена комбинированная трансфораминальная инъекция нервного корешка и каудальная эпидуральная инъекция под седацией. Пациенты были разделены на группу с грыжей диска (группа H, n=21) и группу с дегенеративными изменениями (группа D, n=27). Боль и нетрудоспособность оценивались с использованием визуальной аналоговой шкалы (ВАШ) и индекса

инвалидности Освестри (англ.: Oswestry Disability Index, ODI) на исходном уровне, на 1-й послеоперационный день, на 1-й неделе, через 1 месяц, через 3 месяца, через 6 месяцев и через 12 месяцев.

Результаты. В обеих группах наблюдалось значительное раннее улучшение показателей ВАШ и ODI после процедуры. Исходные показатели ВАШ и ODI были сопоставимы между группами, тогда как группа D была значительно старше. В группе H раннее клиническое улучшение в значительной степени сохранялось в течение 12 месяцев. В отличие от этого, в группе D наблюдалось ослабление эффекта лечения, особенно после 6-го месяца, со значительно худшими показателями ODI и ВАШ, чем в группе H, при более позднем наблюдении. Тем не менее, в обеих группах наблюдалось значительное улучшение по сравнению с исходным уровнем на протяжении всего периода наблюдения.

Выводы. Комбинированная трансфораминальная инъекция в нервных корешков и каудальная эпидуральная инъекция, по-видимому, обеспечивают значительное раннее облегчение боли и функциональное улучшение при поясничной корешковой боли. Положительный эффект был более устойчив у молодых пациентов с изолированной грыжей межпозвоночного диска, тогда как у пожилых пациентов с большей степенью дегенеративных изменений эффект может со временем ослабевать, но все еще оставаться клинически значимым. Этот подход может представлять собой ценный нехирургический вариант лечения у отдельных пациентов без явных показаний к хирургическому вмешательству.

Ключевые слова: грыжа поясничного межпозвоночного диска, дегенеративное заболевание позвоночника, спинальная инъекция, каудальная блокада, блокада нервного корешка.