

The Outcome Of Epidural Injections In Lumbar Radiculopathy Is Not Dependent On The Presence Of Disc Herniation

Assessment of short-term and long-term efficacy

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Introduction

- Lumbar radiculopathy is a spinal condition with major physical, social and economic consequences
- Although lumbar disc herniation (LDH) is the most prevalent cause, a variety of degenerative spinal disorders can instigate unilateral radicular symptoms
- The origin of lumbar radiculopathy is assumed to be multifactorial involving a complex interplay of physical compression, inflammation, and immunologic responses resulting from degenerative spinal changes
- Transforaminal epidural injections (TEI) are a widely used treatment for pain management. However, it remains unclear whether it is an effective therapy for patients without evident disc herniation concordant with clinical symptoms
- This retrospective study explores the correlation between the presence of disc herniation on magnetic resonance imaging (MRI) and outcome of TEI

Methods

- Data were collected from 486 patients that were diagnosed with lumbar radiculopathy between January 1, 2016 and September 1, 2017
 - Clinical diagnosis of lumbar radiculopathy by a neurologist or neurosurgeon
 - MRI examination of the lumbosacral spine
 - Age 18 years or older
 - Treatment with TEI before any surgical intervention for this episode of lumbar radiculopathy
- Patients were stratified according to the presence of lumbar disc herniation concordant with clinical findings (LDH) or not (non-LDH) on MRI

Methods

- Primary outcomes:
 - Patient reported pain relief at 8- and 16-weeks follow-up
- Secondary outcomes:
 - Need for multiple injections
 - Rate of surgery
 - Patient satisfaction at end of treatment
- If a patient underwent spinal surgery subsequent to TEI within 16 weeks, TEI therapy was considered to have failed for the long term

Results – Baseline characteristics

- Baseline characteristics were not completely equal between groups
- In the LDH group patients were younger, more often male, had a shorter duration of symptoms, less often had a history of back surgery, and more often used opioid drugs

	LDH group (n = 337)	Non-LDH group (n = 149)	P value
Age, yrs. (mean ± SD)	55.12 ± 15.28	63.34 ± 14.42	0.000
Sex: M/F	162 (48.1%) / 175 (51.9%)	51 (34.2%) / 98 (65.8%)	0.005
Duration of symptoms			0.006
≤ 3 months	91 (27.0%)	23 (15.4%)	
> 3 months	246 (73.0%)	126 (84.6%)	
Radiological diagnosis			0.000
LDH	337 (100.0%)	0 (0.0%)	
Degenerative stenosis	0 (0.0%)	97 (65.1%)	
Cyst	0 (0.0%)	11 (7.4%)	
Fibrosis due to previous surgery	0 (0.0%)	11 (7.4%)	
Spondylolisthesis	0 (0.0%)	5 (3.4%)	
Inconclusive	0 (0.0%)	25 (16.8%)	
History of back surgery	63 (18.7%)	41 (27.5%)	0.029
NRS overall pain (mean ± SD)	8.0 ± 1.4	7.8 ± 1.4	0.471
Pain medication use	307 (91.1%)	138 (92.6%)	0.511
Opioids	202 (59.9%)	75 (50.3%)	0.042

Values are number (%), except where indicated otherwise. LDH, lumbar disc herniation; SD, standard deviation.

Results – Short-term and long-term outcome

- 70% reported a short-term effect with equal pain reduction between groups
- 43% reported long-term symptom relief
- A large group of patients required multiple injections
- The majority was satisfied at end of treatment, although more patients were satisfied in the LDH group

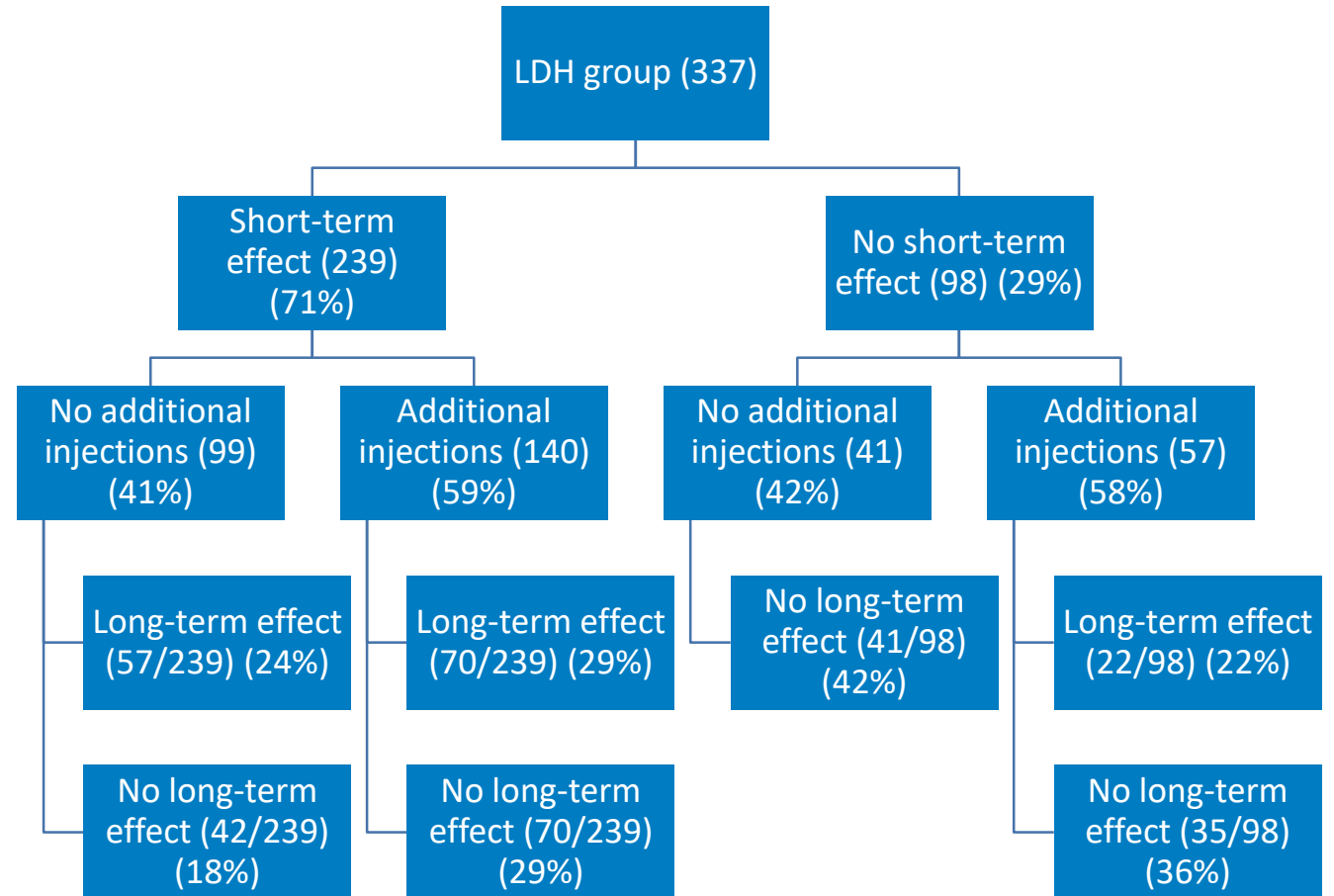
	LDH group (n = 337)	Non-LDH group (n = 149)	P value
Short-term effect (y/n)	239 (71%) / 98 (29%)	102 (68%) / 47 (32%)	0.491
NRS overall pain (mean ± SD)			
At 8-week follow-up	4.7 ± 2.8	4.5 ± 2.6	0.469
Absolute change*	-3.2 ± 3.0	-3.3 ± 2.9	0.868
Additional injections (y/n)	197 (58%) / 140 (42%)	90 (60%) / 59 (40%)	0.688
Long-term effect (y/n)	149 (44%) / 188 (56%)	63 (42%) / 86 (58%)	0.781
Surgery (y/n)	73 (22%) / 265 (79%)	18 (12%) / 131 (88%)	0.013
Likert treatment outcome (g/s/u) [†]	58 (17%) / 162 (48%) / 117 (35%)	13 (9%) / 72 (48%) / 64 (43%)	0.029

* Compared to NRS score at baseline

[†] g = good; s = satisfactory; u = unsatisfactory

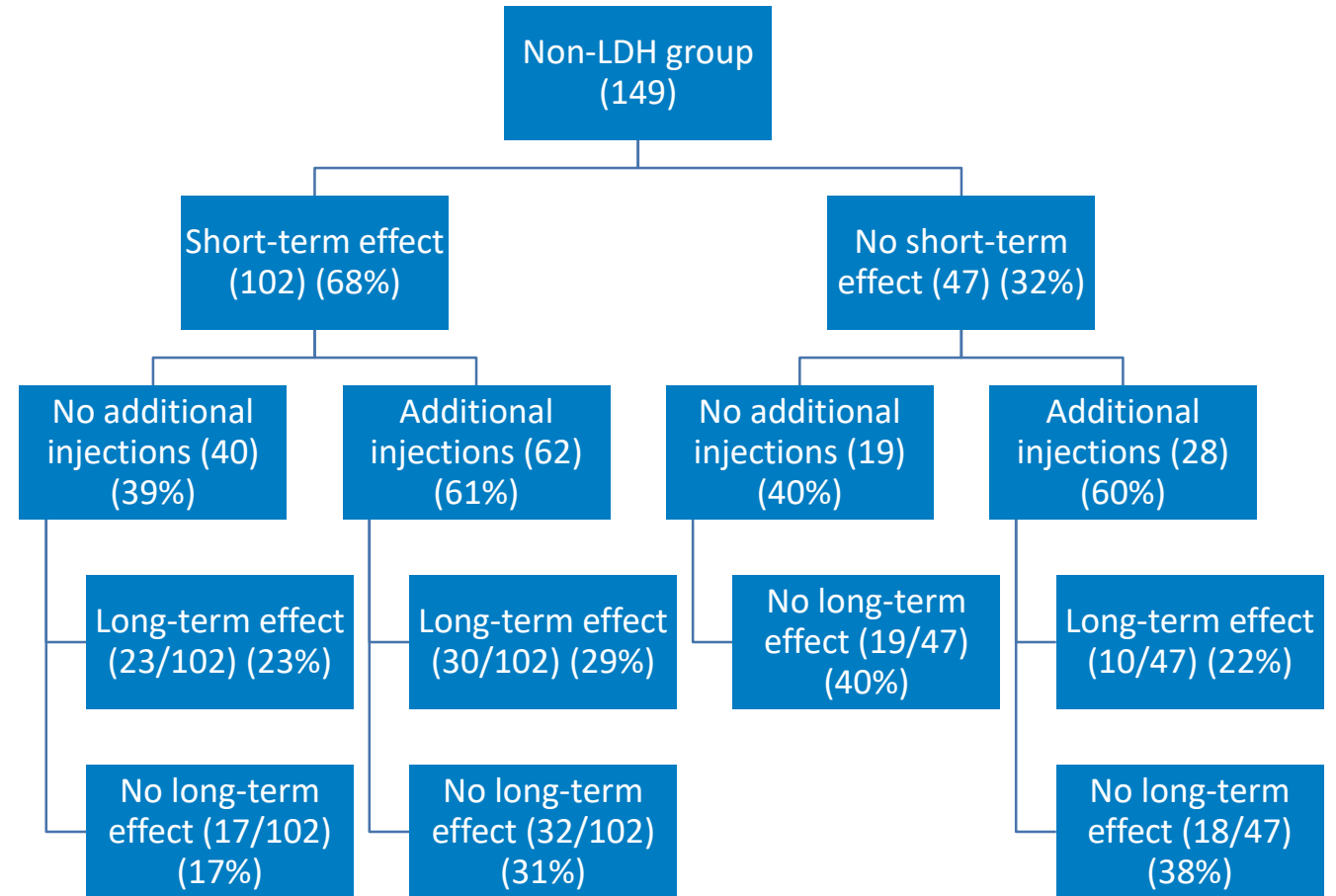
Results – LDH group

- 71% reported considerable pain reduction after TEI in the LDH group
- For 24% of those patients the effect was still present at 16 weeks and 29% required multiple injections for long-term relief
- Of patients unresponsive to the first injection, 22% experienced long-term pain relief after additional TEI



Results – non-LDH group

- 68% reported considerable pain reduction after TEI in the non-LDH group
- For 23% of those patients the effect was still present at 16 weeks and 29% required multiple injections for long-term relief
- Of patients unresponsive to the first injection, 22% experienced long-term pain relief after additional TEI



Discussion

- Symptom relief after TEI seems to be independent of the presence of nerve root compression or evident disc herniation on MRI as equal treatment effect was observed between groups. This is in line with results from previous studies.
- In the absence of nerve root compression or evident disc herniation on MRI, inflammatory processes resulting from degenerative changes in other spinal structures may play a fundamental role which are targeted by TEI therapy.
- Since the etiology of lumbar radiculopathy does not affect outcome results after TEI, routine pretreatment MRI examination may not always be necessary (excluding red flag indications).

Discussion

- This may allow for expedition of TEI with extensive imaging postponed to a later stage. As a result, more adequate symptom management in an earlier stage of lumbar radiculopathy may be achieved.
- Limitations of the current study: retrospective nature, paucity of other systematically reported outcome scores, dissimilarity of patient group characteristics at baseline

Summary points

- Regardless of the radiological etiology, the majority of patients treated with TEI benefits on both short- and long-term after a single or multiple injections regime
- Subsequent injections are advisable if the effect from the first injection is unsatisfactory or wears off
- Possibly, TEI therapy might be planned at an earlier stage resulting in more adequate treatment of symptoms, reduction of long-term opioid use and avoidance of surgical intervention
- Further research is required to assess early TEI therapy and consequent adverse event rates in a randomized-controlled trial setting

Disclosures

All other authors declare that they have no conflict of interest