Systematic flexion-based approach for patients with lumbar spinal stenosis: myth or reality?

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INTRODUCTION

- Low back pain (LBP) is the most common type of musculoskeletal pain reported by adults.
- Lumbar spinal stenosis (LSS) is a cause of LBP secondary to morphological changes.
- These radiological changes can either be quantitative or qualitative causing the narrowing of the spinal canal for neural and vascular tissues.

- Clinicians often use a flexion-based exercise protocol for cases of LSS identified with imaging report in the literature, regardless of the clinical response. (Padmanabhan, Sambasivan & Desai, 2011)
- However, the most recent clinical guidelines advocate an approach based on the patient's clinical response following a mechanical lumbar evaluation, and the identification of a directional preference. (Stanton et al. 2011)

PROBLEMATIC

- There is controversy in the literature concerning the optimal treatment approach for cases of LSS.
- Recent studies demonstrated favorable responses following extension exercises in cases of LSS (Padmanabhan, Sambasivan & Desai, 2011).
- No studies has yet assessed the prevalence of directional preference (DP) in patients with LSS.

OBJECTIVE OF THE STUDY

- Explore the prevalence of DP in patients presenting with radiological and clinical signs of LSS.

METHODOLOGY

DESIGN OVERVIEW

- Retrospective descriptive study (chart review)

PARTICIPANTS

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Participants</th>
<th>Recruitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Consulted in physical therapy for an episode of LBP</td>
<td>33 Participants</td>
<td>33 Participants assessed based on the inclusion criteria</td>
</tr>
<tr>
<td>2. Imagery report with evidence of LSS (available from chart or patient)</td>
<td>9 Participants rejected (no access to the imagery report)</td>
<td></td>
</tr>
<tr>
<td>3. Results of a mechanical lumbar assessment (repeated movements) performed by a trained physical therapist</td>
<td>27 Participants included</td>
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DATA COLLECTION

- Review of each participant’s physical therapy chart.
- Variables measured:
  1) age
  2) sex
  3) directional preference (flexion, extension, no DP)
  4) Nature/etiology of LSS derived from the radiologist’s report
- Participants were then classified into 3 subgroups:
  - Mixed diseases
  - Degenerative diseases
  - Disc diseases

RESULTS

- Description of participants

<table>
<thead>
<tr>
<th>Sex</th>
<th>Male</th>
<th>Female</th>
</tr>
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<tbody>
<tr>
<td>Number</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>27</td>
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</tbody>
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- Prevalence of directional preferences in patients with an imagery report indicating the presence of a lumbar spinal stenosis

- Mechanical responses of patient with LSS

- Prevalence of directional preferences in 27 patients with an imagery report indicating the presence of a lumbar spinal stenosis according to the etiology of their stenosis

- Our observations show that 88.9% of our sample had a DP. Among them, 70.4% (19/27) had a DP in flexion, 18.5% (5/27) in extension and 11.1% (3/27) had no DP.

DISCUSSION

- The results show that a high proportion of patients had a DP (88.9%), therefore confirming the mechanical aspect of this type of LBP.
- 80% (19/24) of the participants had a DP in flexion which is in concordance with the biomechanical principles. However, 20% of patients in our sample had a DP in extension.
- These observations reiterate the fact that a proportion of patients with signs of LSS show a positive response to extension and not solely in flexion. Hence a systematic flexion based approach is not warranted for all cases of LSS.
- Our three different subgroups, based on the etiology of the spinal stenosis, showed opposing results regarding the DP: we observed a similar ratio of patients responding in flexion/extension in the discal subgroup compared to a clear preference for flexion in the mixed and degenerative subgroup.
- These observations reflect the importance of assessing the patient’s DP, especially the ones with discal diseases. Also, this illustrates the fact that patients with LSS caused by disc diseases are more prone to respond in extension.

CONCLUSION

1. A majority of patients with radiological signs of LSS have a DP with lumbar flexion.
2. Depending on the etiology of the LSS, patients may have a positive symptomatic response to flexion or extension exercises.
3. Our findings are in concordance with the most recent practice guidelines, that advocates for an approach based on the patient’s symptomatic response.

STRENGTHS

- First study to explore the prevalence of DP in patients with LSS.
- Our research was conducted in real clinical settings.
- Our results are easily applicable in the clinical field.

LIMITATIONS

- Small number of participants (n = 27).

- Information bias between the two clinical settings.
- Exploratory study.
- Information bias between the two clinical settings.

STATISTICAL ANALYSIS

- Descriptive statistics (means and proportions) were used to characterize the subjects and their responses to the mechanical lumbar evaluation.

There's a clear predominance of a flexion DP in the degenerative and mixed subgroups. However, in cases where the LSS is mainly caused by disc diseases, there is a similar ratio of patients responding in both lumbar flexion and extension.