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Specificity and sensitivity of identifiers specific to clinical lumbar spine instability

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Purpose

We compared specificity and sensitivity of several common subjective and objective symptoms associated with clinical instability of the lumbar spine (LSI).

Relevance

A recent Delphi study was designed to establish a consensus regarding the common subjective and objective descriptors of clinical LSI [1]. However, literature has not investigated yet all psychometric properties of these descriptors.

Methods

We included 30 patients (16 women and 14 men) with nonspecific chronic low back pain with a mean (\pm standard deviation) pain duration, pain intensity (0-100 Visual Analogue Scale) and disability (0-24 Roland-Disability Questionnaire) scores reaching respectively 8 (\pm 9) years, 46 (\pm 21) and 10 (\pm 4). Patients were submitted to one assessment session composed of two parts: the first part was conducted by a specialist in manual therapy who explored objective identifiers of clinical LSI, whereas a physiotherapist conducted a standardized anamnesis (including subjective identifiers of clinical LSI) during the second part; only identifiers reported in the Delphi study [1] were included in our study. Finally, the manual therapist confronted results of his clinical tests and the anamnesis in order to determine whether or not the patient presented a functional lumbar instability (based on his knowledge, skill and experience). We measured specificity and sensitivity of the identifiers according to his diagnosis.

Results

According to the manual therapist, 9 patients (7 females) presented a functional LSI whereas 16 patients (6 females) did not; the remaining 5 patients (3 females) were considered as "pseudo-instable" because they presented as much identifiers suggesting a LSI as identifiers suggesting no instability. The three groups did not differ regarding age, pain intensity, disability or pain duration ($p > 0.05$). Only a few identifiers appeared significantly related to LSI. Among them, "Frequent bouts or episodes of symptoms" had high specificity (88%) and sensitivity (78%). "Fear and decreased willingness to move" and "Record of poor improvement with past treatment interventions" showed high specificity (>94%) and moderate sensitivity (63-67%). "Frequent clicking, grinding and popping during movements" had very high specificity (100%) but low sensitivity (22%). "Report of frequent episodes of muscle spasms" and "sleep disturbances" showed very high sensitivity (89-100%) but low specificity (50%). Regarding the objective identifiers of LSI, "Aberrant movement during active trunk flexion-extension" had high specificity (75%) and sensitivity (89%). "Gower's sign" showed high specificity (100%) and moderate sensitivity (56%). "Poor lumbopelvic control" had very high specificity (100%) but low sensitivity (33%); in contrast, the "Prone instability test" was highly sensitive (89%) but had low specificity (50%).

Conclusions

The subjective and objective identifiers of clinical LSI reported in the Delphi study [1] appeared very heterogeneous regarding their sensitivity and specificity. Frequent bouts or episodes of symptoms and aberrant movement during active trunk flexion-extension had the best combination of specificity and sensitivity.

Implications

Our results may help therapists during clinical differential diagnosis; however, they need to be confirmed in a study including a larger sample and an inter-rater reproducibility analysis.

Key words

Clinical instability, lumbar spine, manual therapy, chronic low back pain

References

1. Cook C, et al. Subjective and objective descriptors of clinical lumbar spine instability: A Delphi study (2006), *Manual Therapy* 11: 11-21.