

Can the Effect of Medial Branch Blocks for Painful Zygapophysial Joints be Predicted by Magnetic Resonance Imaging? A Retrospective Evaluation.

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Introduction

For a specific treatment of patients with low back pain the identification of the pain source is important. The zygapophysial joints are a possible pain source for which radiofrequency denervation exists as a specific treatment. The most accepted method for diagnosing zygapophysial joint pain is controlled medial branch blocks. The identification of a painful joint seems difficult, because there is no correlation between the clinical symptoms of low back pain and degenerative spinal changes on radiological imaging studies. Specifically, the association between degenerative changes in the lumbar facet joints and symptomatic low back pain remains unclear and is a subject of ongoing debate.

The purpose of this study was to test the correlation between painful zygapophysial joints and changes seen in magnetic resonance imaging (MRI) in a retrospective practice audit.

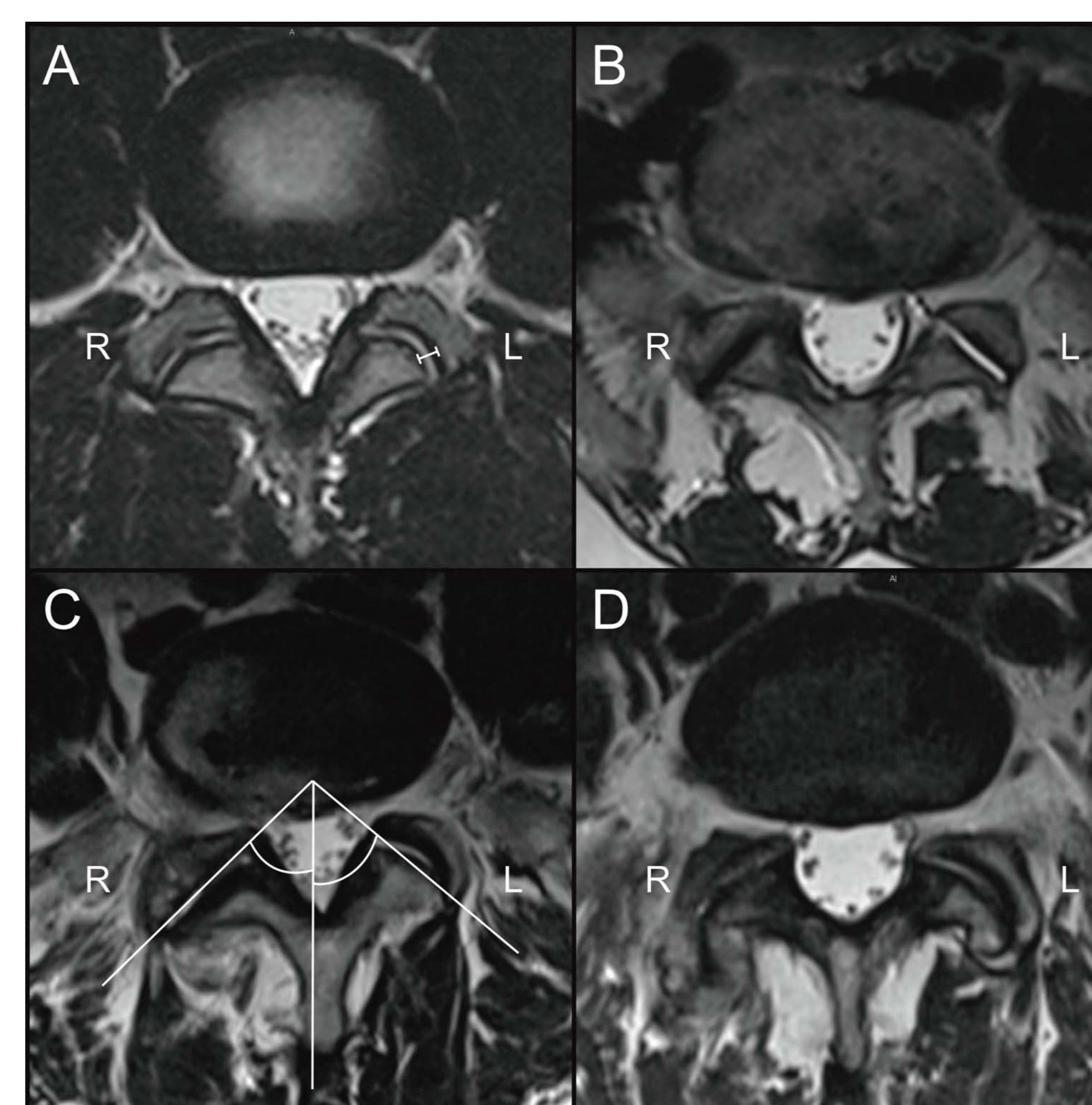
Material and Methods

Retrospective practice audit. Patients with one-sided low back pain were tested with one or two medial branch blocks (minimum 50% pain reduction). The MRI scans of patients with a positive response to both medial branch blocks were compared with normal MRI scans. The evaluation of the MRI scans was performed blinded for the patient symptoms and the symptomatic side and level. The dimensions of the joint were assessed and osteoarthritis was graded.

Grade	Criteria
0	Normal facet joint space (2–4 mm width)
1	Narrowing of the facet joint space (< 2 mm) and/or small osteophytes and/or mild hypertrophy of the articular process
2	Narrowing of the facet joint space and/or moderate osteophytes and/or moderate hypertrophy of the articular process and/or mild subarticular bone erosions
3	Narrowing of the facet joint space and/or large osteophytes and/or severe hypertrophy of the articular process and/or severe subarticular bone erosions and/or subchondral cysts

Criteria for grading osteoarthritis of the zygapophysial joints

Results



Axial T2 MRI examples from this study.

A: L4/5. Control group. Grading for both joints: grade 0. The measurement of the width of the joint gap is shown.

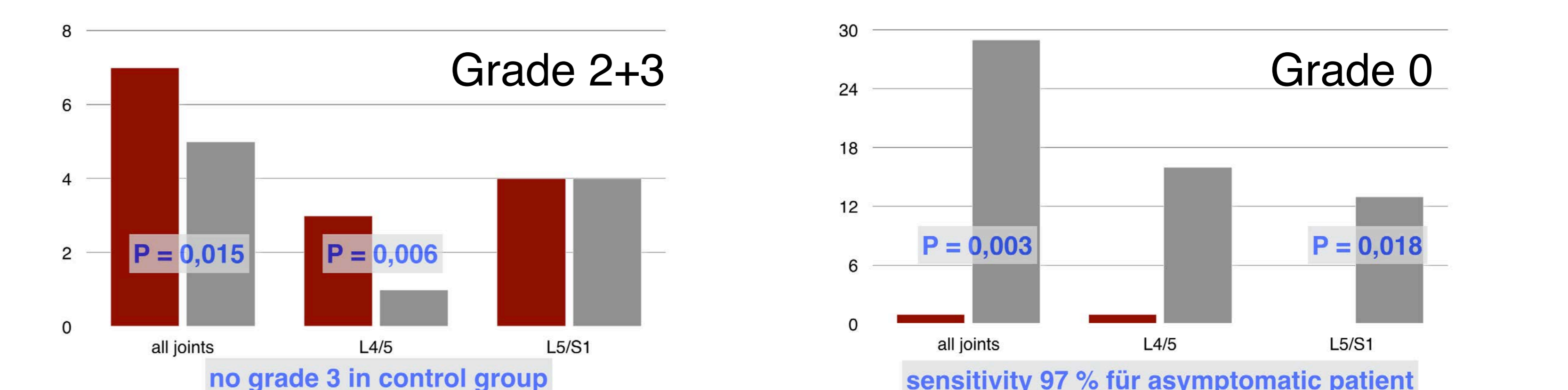
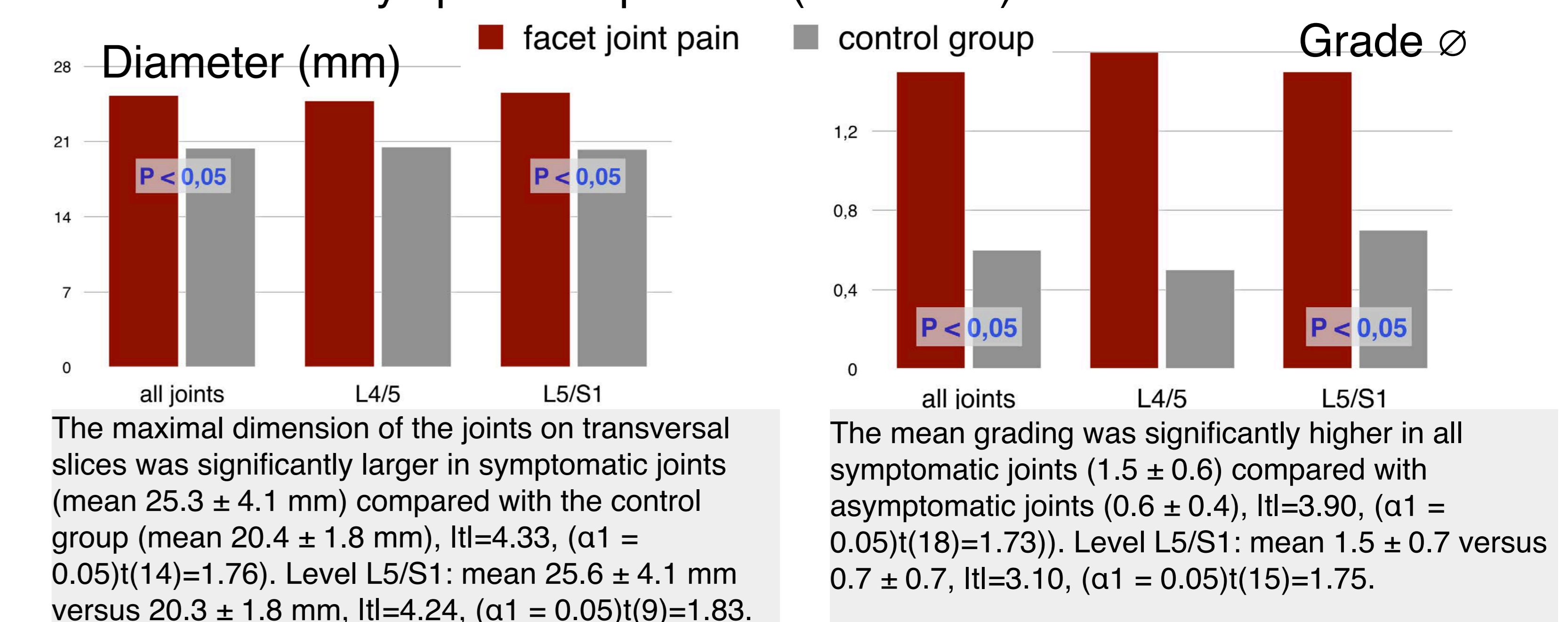
B: L5/S1. Right side symptomatic. Right: grade 1, left: grade 0. Different signals of the joint gap on the right and left side are recognizable.

C: L5/S1. Right side symptomatic. Right: grade 2, left: grade 0. The orientation of the joint is shown.

D: L5/S1. Right side symptomatic. Right: grade 3, left: grade 2. Different dimensions of the left and the right joint.

L: left, R: right.

Fifteen symptomatic patients and 15 asymptomatic patients were included and evaluated. The sensitivity and the specificity for the differentiation between asymptomatic and symptomatic patients based on the MRI scan was 0.87 each. The maximum diameter of symptomatic joints was significantly larger ($P < 0.05$), and the grading of osteoarthritis was significantly higher for symptomatic joints ($P < 0.05$). No healthy patient was assigned a grade 3. Grades 2 and 3 were found significantly more often in symptomatic patients ($P = 0.015$). Accordingly, only one symptomatic joint was assigned grade 0. Grade 0 was found significantly more often in asymptomatic patients ($P = 0.003$).



Conclusions

The presented MRI technique can not positively predict the effect of the medial branch block. It therefore has limited value as a diagnostic test for lumbar zygapophysial joint pain. However, the osteoarthritis grading for the lumbar zygapophysial joints might be helpful for finding predictors for negative response if the results of the grading are graded zero. Therefore, unnecessary medial blocks might be avoided.

25 consecutive patients
one sided low back pain
> 3 month
MRI required

Medial branch block positive
(> 50 % pain reduction)
MRI of 15 symptomatic joints

Control group
15 patients without low back pain
MRI of 30 asymptomatic joints

Neuroradiological assessment (blinded for clinical data)

MRI:

axial and sagittal T2
L4/5 and L5/S1

Joint:

maximum dimension
osteoarthritis grading