Enhanced MRI findings in two groups of LBP patients and asymptomatic controls – Baseline data

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Introduction

The use of magnetic resonance imaging (MRI) in assessing acute and degenerative changes in the lumbar spine and its relevance in low back pain (LBP) and sciatica is still a controversial subject in research.
The aim of this study was to identify inflammation in tissue that might have effect on sciatica and LBP.

Methods

The baseline data presented are from an ongoing longitudinal MRI study using pre- and post contrast scans.
Three groups of patients, 68 patients with LBP and subacute sciatica, 57 patients with LBP only, and 32 asymptomatic controls were scanned using a standard MRI-protocol on an 0.2 T MRI-system (Siemens Open Viva). All patients were administered Gd-DTPA (MultiHance) according to bodyweight.
The enhancement of the lumbar discs, HIZ, protrusions, nerve roots, endplates and facet joints were evaluated using a visual evaluation protocol. Differences between groups were analysed using Fisher's exact (two sided).

Results

Results of the visual evaluation are shown in the table below. Prevalence of enhancement in protrusions and nerve roots were significantly higher ($p<0.0001$) in patients with sciatica compared to patients with LBP-only and asymptomatic controls. With respect to enhancement in endplates, there was significant difference ($p<0.05$) between LBP-sciatica and asymptomatics. Prevalence of enhancement in facet joints were significantly different between LBP-sciatica and asymptomatic controls ($p<0.001$) and between LBP-only and asymptomatic controls ($p<0.05$).
There were no significant differences between groups with respect to enhancement in the disc and HIZ.

	LBP-sciatica (n=68)	LBP-only (n=57)	Asymptomatic (n=32)
	%	%	%
Disc	4,4	8,8	0
HIZ	39,7	31,5	21,8
Protrusion	44,1 *	0	6,3
Roots	32,4 *	5,2	3,1
Endplates	32,4 †	24,1	12,5
Facet joints	38,2	24,1	6,3 ‡
Other	10,3	5,3	3,1

* Difference between LBP-sciatica and the other groups ($p<0.0001$).
† Difference between LBP-sciatica and Asymptomatic group ($p<0.05$)
‡ Difference between Asymptomatic group and LBP-sciatica ($p<0.001$) as well as LBP-only ($p<0.05$)

Discussion

Results from this study show that there are significant differences between groups with respect to enhancement in protrusions, nerve roots, facet joints and endplates.
Though follow-up analysis is required to identify the long term consequences, i.e. prognosis, of these findings, these results imply that enhanced MRI could raise the prognostic value of this modality.