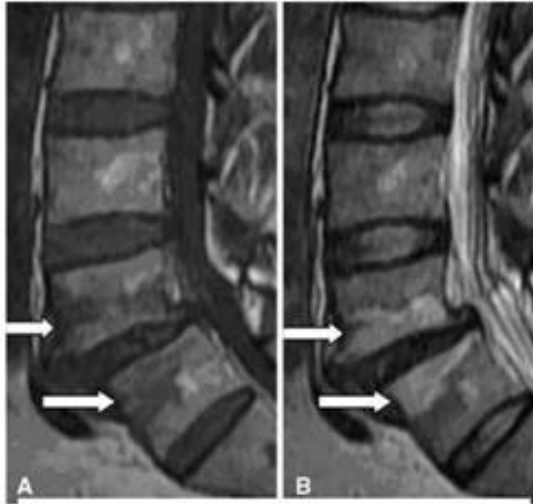


## MODIC CHANGES

### RADIOLOGIC CHANGES

#### Modic I



MC type I (arrows): hypointense on T1WI (A) and hyperintense on T2WI (B)

Hypo on T1 and Hyper on T2

? No relation to pain

May resolve in 12 months or become Modic II

Early cartilage fissuring and increasing vascularity

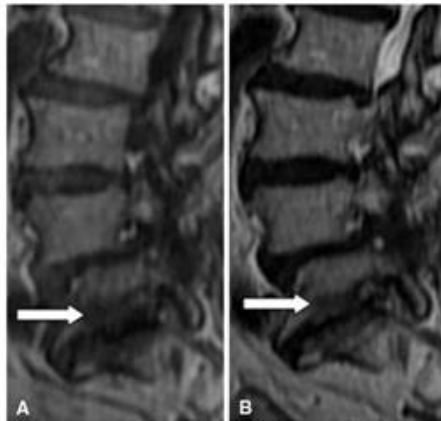
#### Modic II



MC type II (arrows): hyperintense on T1WI (A) and isointense or hyperintense on T2WI (B)

Hyper on T1 and on T2  
Fatty replacement of the marrow

Type III Modic Advanced degeneration



MC type III (arrows): hypointense on T1 (A) and hypointense on T2WI (B)

Type	MRI		Pathology
	T1-weighted	T2-weighted	
I	SI reduced	SI increased	Fissures of the cartilaginous endplate, increased vascularity within the subchondral bone
II	SI increased	SI increased or isotense	Fatty replacement of the marrow, perhaps a result of marrow ischaemia
III	SI reduced	SI reduced	Subchondral sclerosis
None			

## REFERENCES

1. Arana Spine J. 2011;11(5):402-11.

Conflicting reports exist regarding the prevalence of Modic changes among low back pain (LBP) patients and factors associated with their existence.

487 patients undergoing lumbar spine MRI examination for **chronic LBP**.

A multivariate logistic regression model was developed to assess the features associated with Modic changes.

Modic changes were found in **81% of** the patients.

The most common was Type II (51.3%), affecting only the end plate.

Modic changes are more in male, and having a higher BMI.

2. Kuisma. Spine (Phila Pa 1976). 2007 May 1;32(10):1116-22. Finish Study

Vertebral endplate changes are bone marrow lesions visible on MRI and are assumed **to be associated with degenerative intervertebral disc disease**. Associations of these so-called Modic changes with clinical symptoms are controversial.

30% were type I,

66% type II,

4% Type III

Site: 85% at L4-L5 or L5-S1.

Modic changes at L5-S1 showed significant association with pain symptoms with increased frequency of LBP and sciatica episodes. **Type I lesions and extensive lesions in particular were closely associated with pain.**

3. Chin. J Spinal Disord Tech. 2008 Apr;21(2):139-44.

Prospective case controlled to determine the outcome after microdiscectomy in patients with disc herniation, concordant sciatica, and low-back pain with Modic I and II degenerative changes compared with similar patients without Modic changes.

**30** consecutive patients underwent a microdiscectomy by a single surgeon.

#### **RESULTS:**

There was no significant difference in preoperative sciatica, low-back pain.

Postoperatively, all patients had improved sciatica and resolution of any nerve tension sign.

#### **Conclusions:**

There was a trend toward greater improvement in Oswestry scores in patients without Modic changes (P=0.09). Both groups reported statistically significant improvement in sciatica, low-back pain, and disability after microdiscectomy. Microdiscectomy

was therefore an effective treatment for disc herniation and concordant sciatica despite low-back pain and Modic I and II degenerative changes.