

EVALUATION OF CONSERVATIVELY TREATED LUMBAR DISC PROLAPSE USING MICHIGAN STATE UNIVERSITY (MSU) CLASSIFICATION

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Introduction

Lumbar disc prolapse is considered a worldwide health problem. Numerous studies showed that conservative treatment yields similar outcome compared to surgical treatment on the long term. To explain the spontaneous regression of disc prolapse three theories were suggested. The first theory: shrinkage through dehydration and loss of water content, the second theory: the tension applied by the posterior longitudinal ligament provided there is no defect in annulus fibrosis, the third one: the resorption of disc material of extruded parts by inflammatory reaction mediated by cytokines release, macrophage infiltration and phagocytosis, enzymatic degradation, and neovascularization. In this study, MSU classification was used as tool in evaluating the change that happened in MRI of conservatively treated patients for at least 6 months.

Aim of the work

To evaluate patients suffering from lumbar disc prolapse treated conservatively using MSU classification.

Patients and Methods

32 patients with symptomatic lumbar disc prolapse treated according to conservative treatment program in spine unit in El-Hadara university hospital constituted the method of this study. MRI examination was done at presentation and at least six months during follow up. MRI images were evaluated and classified using MSU (Michigan State University) Classification.

Results

After at least six months of follow up (mean± SD 15.59 months ± 9.95), 21 patients (65.6%) showed regression in their disc size, with only 15 of these cases (46.9%) moved from higher grade to lower grade (downgrade) using the MSU classification. The level of agreement between classification changes and MRI changes in the present study was 0.421, which reflects a moderate accuracy in describing these changes in MRI.

Table 1: Distribution of the studied cases according to changes in disc size after treatment viewed by MRI

Changes in disc size after treatment viewed by MRI (n = 32)	No.	%
Regression	21	65.6
No change	6	18.8
Progression	5	15.6
Total	32	100.0

Table 2: Distribution of cases according to MSU classification changes

MSU classification changes	No.	%
Downgrade	15	46.9
No change	16	50.0
Upgrade	1	3.1
Total	32	100.0

Table 3: Relation between MSU Classification changes and MRI changes after conservative treatment and level of agreement

	MSU classification changes					
	Downgrade (n = 15)		No change (n = 16)		Upgrade (n = 1)	
	No.	%	No.	%	No.	%
Changes in disc size after treatment viewed by MRI						
Regression	14	43.8	7	21.9	0	0.0
No change	0	0.0	6	18.8	0	0.0
Progression	1	3.1	3	9.4	1	3.1
Kappa (p)	0.421*(<0.001*)					
Level of agreement	Moderate agreement					

κ: kappa test

*: Statistically significant at p ≤ 0.05

Value of K	Strength of agreement
< 0.20	Poor
0.21 - 0.40	Fair
0.41 - 0.60	Moderate
0.61 - 0.80	Good
0.81 - 1.00	Very good

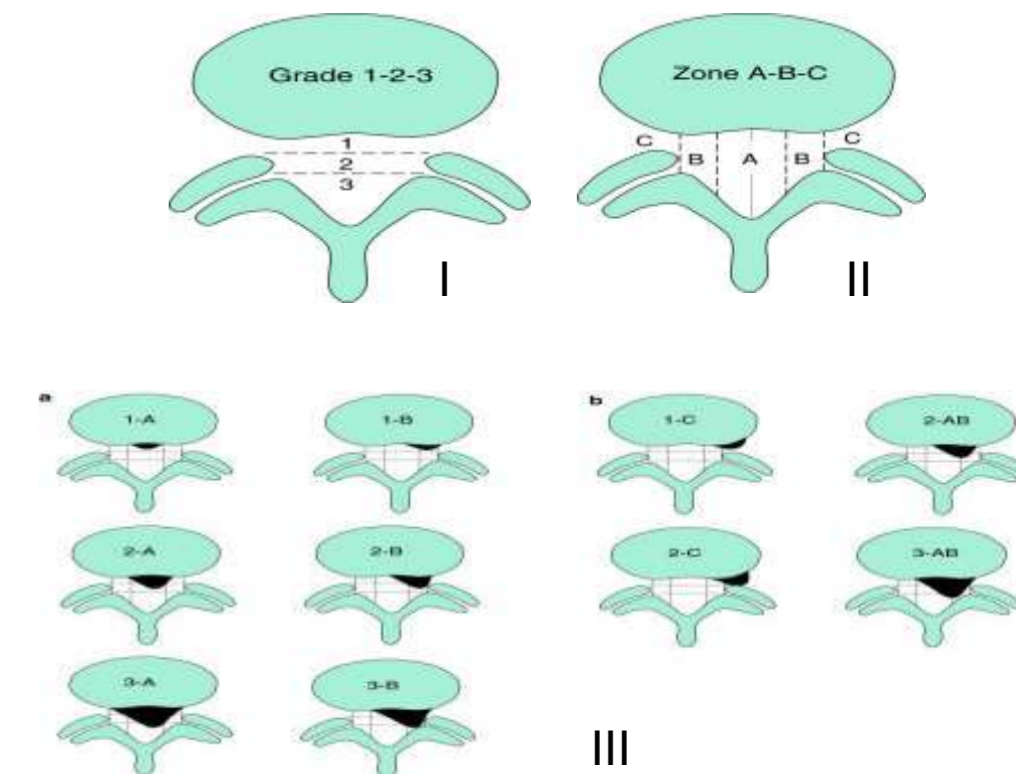


Figure : MSU classification:
I) Grading the disc herniation for size, II) Zoning the disc for location, III) Combining size and location.
a) Lesions 2 B are commonly symptomatic. 3A lesions are often seen in Caudaequina.
b) Lesions 2 C are the largest foraminal lesions. Lesions 2 AB are quite common, occurring on the line between zones A and B

Conclusion

MSU classification is simple and easy to apply as anatomical classification, but it has its limitations in evaluating MRI at follow up. It has a moderate sensitivity in describing disc size changes in MRI, which means that it cannot evaluate some changes happening in MRI of patients treated by conservative treatment.