Facet Joint Arthrosis
Disc Degeneration and Lumbago

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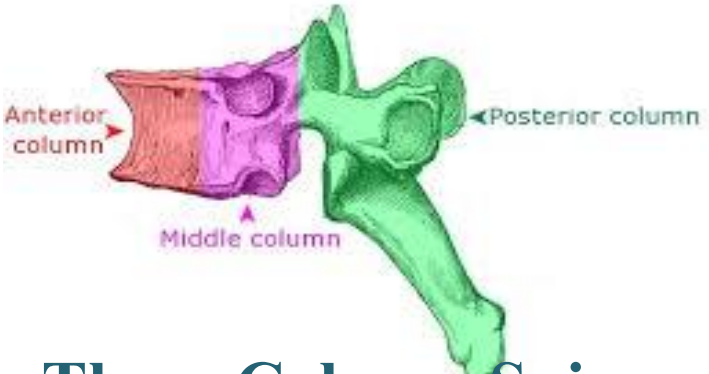
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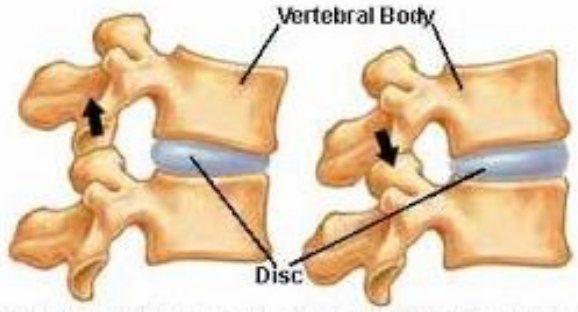
INTRODUCTION

The initial division of spine into three columns for describing post traumatic injury by Denis Francis was a landmark in defining and describing stability of spine.

However in Degenerative or Aging spine , there have been proposed two strong columns- Anterior and Posterior columns which maintain the integrity and stability of spine



Three Column Spine



Two Column Spine

SEQUENCE OF EVENTS

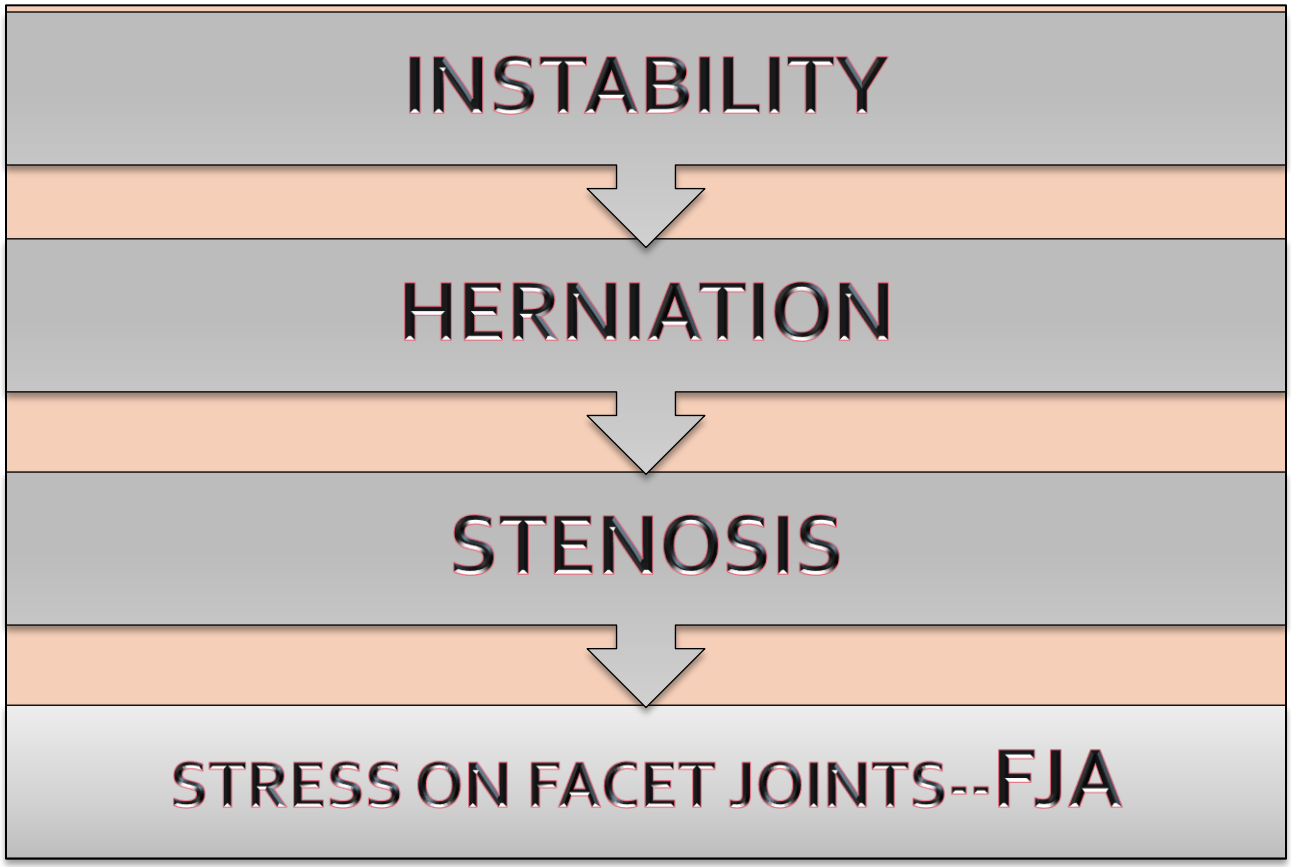
Disc Degeneration ⟷ Facet Joint Arthrosis







DISC DEGENERATION OUTCOMES:



AIM OF PRESENT STUDY

An MRI Study Of Lower Lumbar Spine Was Done In Low Back Pain Individuals

- For Assessment Of Prevalence And Grade Of Facet Joint Arthrosis and its association with Degenerative Disc Disease

MATERIALS & METHOD

- Fifty cases of LBP were enrolled for the study; age-group 20-70 years; Males=23, Females=27 (mean age=41.92 yrs & 44.19 yrs respectively)

LBP
- By pre-defined questionnaire
- Oswestry low back pain

LSS/ DD
- Decreased osseous diameter of vertebral canal
- Decreased IVD height, Herniation and/or Disc Prolapse

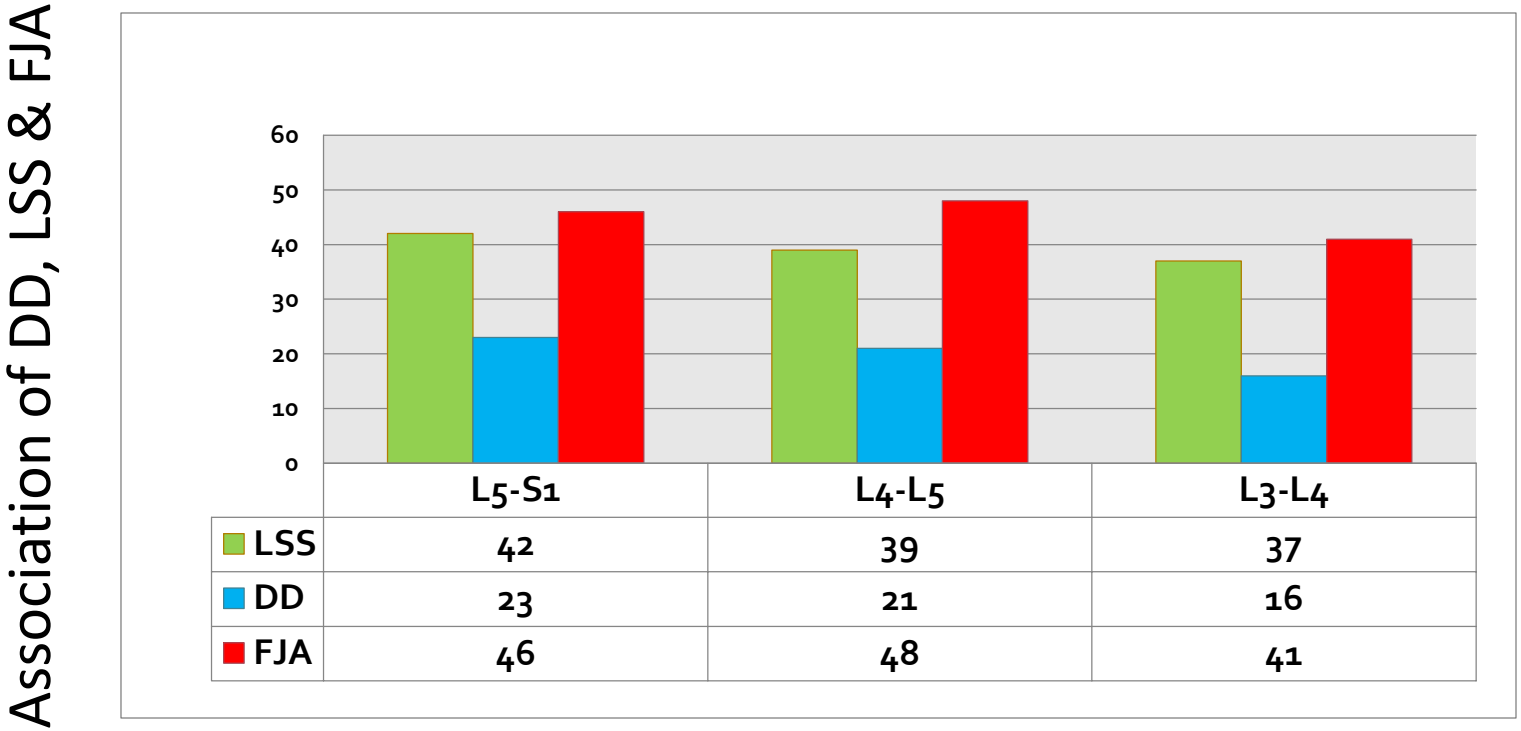
FJA
- Decreased facet joint space with/without hypersclerosis of joint margins
- Osteophyte formation

Philips 1.5 T Achieva

Axial, coronal and sagittal images , 4mm slice gap

RESULTS

1) The LSS was seen at lower vertebral levels in cases of LBP
2) The highest prevalence of FJA was seen at L4-L5 vertebral level
3) FJA was evident without DD
4) The highest prevalence of DD was seen at the caudal most vertebral level



	L5-S1	L4-L5	L3-L4
LSS	42	39	37
DD	23	21	16
FJA	46	48	41

GRADING FJA

Grade 0 --Normal facet joint space (2±4 mm)

Grade 1 --Narrowing of the facet joint space (< 2 mm)

Grade 2-- grade1+ sclerosis of joint margins + mild sub-articular bone erosions

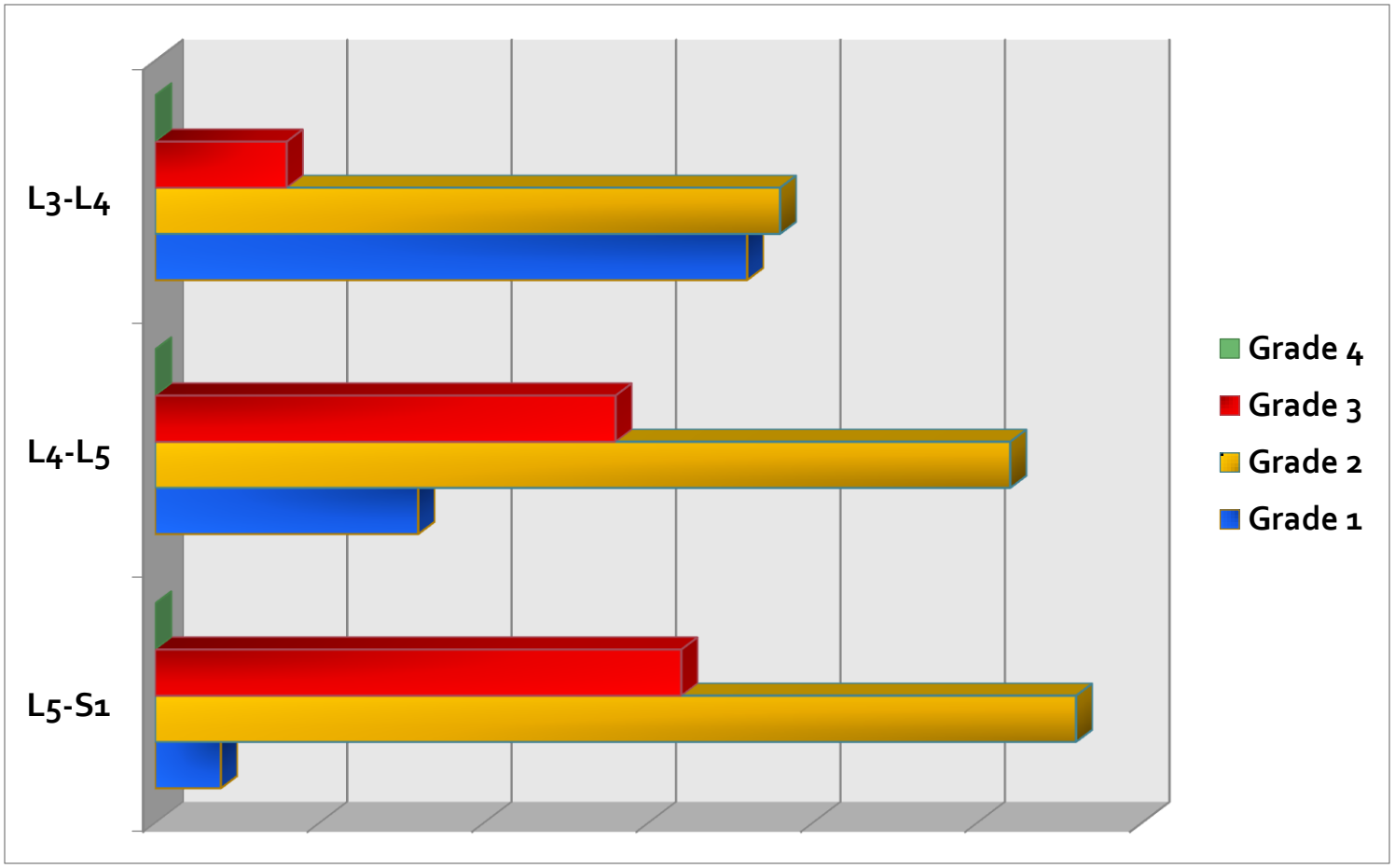
Grade 3– Grade2 + small osteophytes +severe sub-articular bone erosions

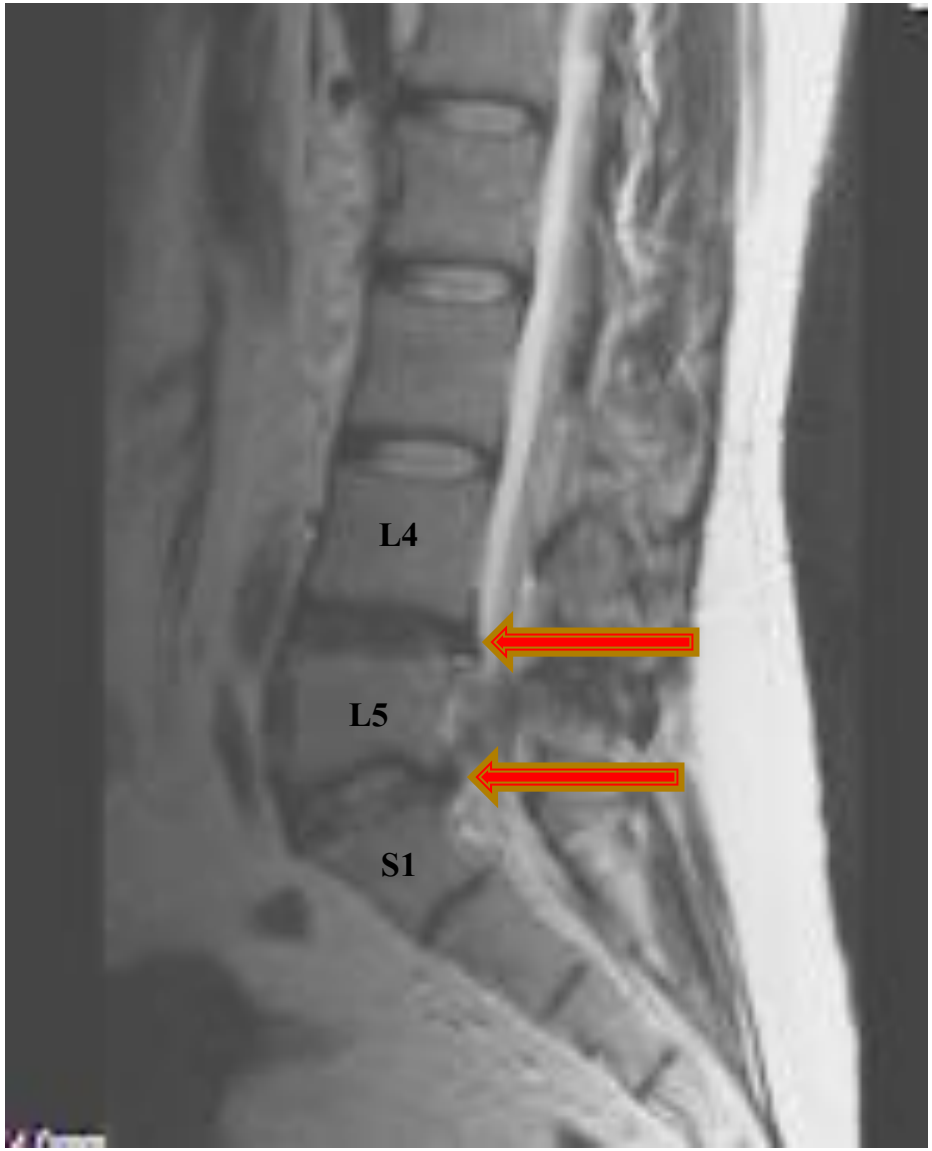
Grade 4- grade3+ large osteophytes and/or subchondral cysts

Prevalence of different grades of FJA

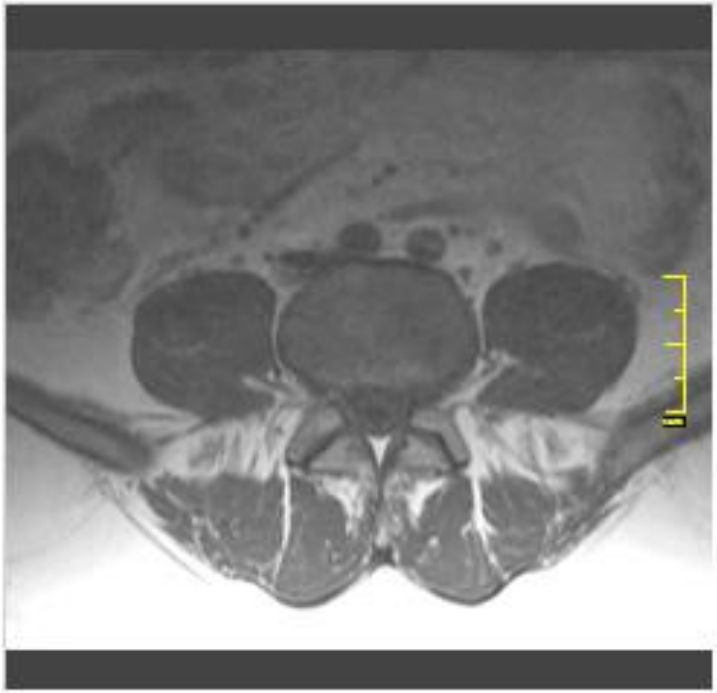
Vertebral Level	Grade 1	Grade 2	Grade 3	Grade 4
L5-S1	2(0.04)	28(0.61)	16(0.35)	0
L4-L5	8(0.17)	26(0.54)	14(0.29)	0
L3-L4	18(0.44)	19(0.46)	4(0.09)	0

Prevalence Of Different Grades Of FJA

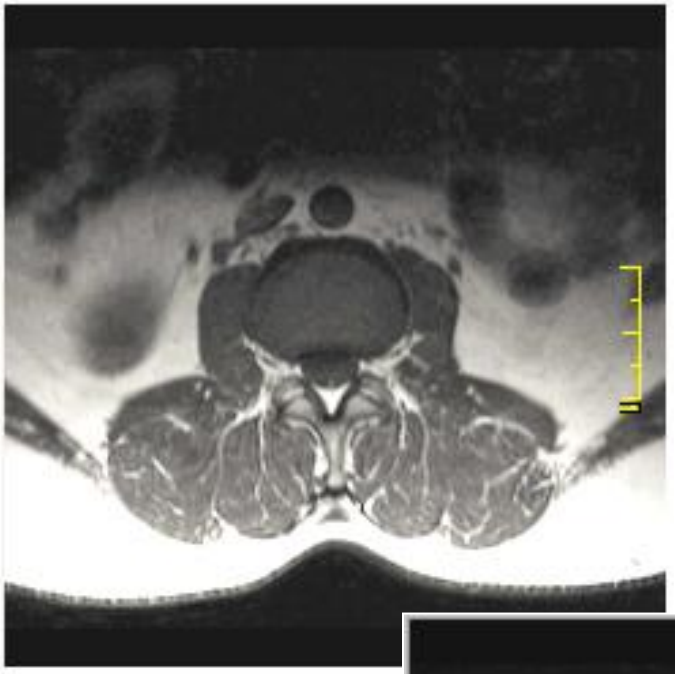




MRI image showing Disc Degeneration



GRADE 1



GRADE 2



GRADE 3

DISCUSSION

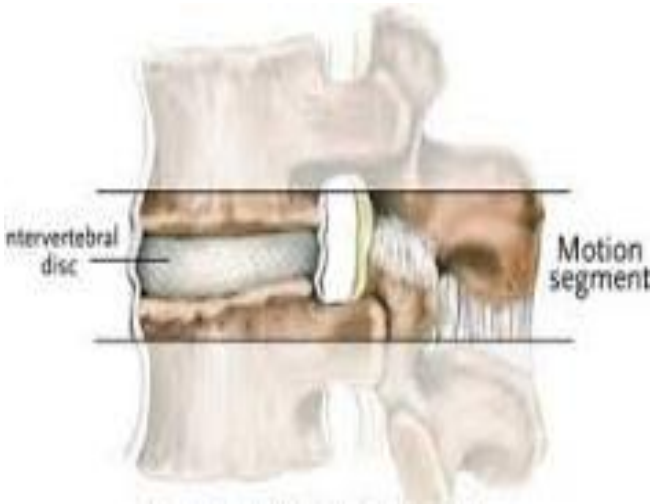
❖ Disc degeneration is an inevitable process , occurring in normal response to aging.

❖The anatomy and functional biomechanics of facet joints provides the concept of “three joint complex” where

IVD and the associated facet joints act as the anterior and posterior joints respectively to stabilize each motion segment

(two consecutive vertebral bodies and associated facet joints).

❖ The interdependence of IVDs and facet joints suggest that change in any one joint will cause degenerative changes to ensue at the other two, referred to as the “Tripod effect”.



❖ The Tripod Effect defines the interdependence of two components without highlighting the fact as to which is affected first.

❖It has been suggested that IVD is first to undergo degenerative changes, and is an important component to produce LBP

❖In the present study however LBP was evident without DD

-in cases with FJA, highlighting the fact that degenerative changes occur earlier in facet joint which are typical synovial joint as against fibro-cartilaginous joint of IVD.

❖However, once degeneration of disc occurs, it produces segmental load bearing alterations on the facet joints, precipitating the arthritic changes in the joints,as evident by higher Grade of FJA on spinal motion segment (L5-S1) caudal to level of disc degeneration(L4-L5).

CONCLUSION

The ongoing debate on choosing criteria for conservative and surgical treatment depends not only on the degeneration of IVD but also on the degenerative changes setting in at the facet joints.

Hence the present study clearly demonstrates that facet joints should also be taken as a criteria for conservative and surgical management of LBP.

THANK YOU FOR YOUR ATTENTION!!!

