INTRODUCTION
The most frequent cause of lumbar pain is represented by the dislocation of the intervertebral disc. More often than not the disc hernia takes place on a disc that suffered degenerative modifications. But there are also cases that occur in post traumatic context.(1) The disc hernia implies the breakage of the fibber ring and the movement of a part of the vertebral body. Fragments from the fibber ring and from the cartilaginous plate of the vertebral body always accompany parts of the herniated disc.(2,3) There are several stages of the disc hernias, these vary from small focal protrusions to cases with large sequestered fragments.(1,4)

PURPOSE OF THE STUDY
Emphasis of radiologic modifications and MRI in lumbar disc hernias.

MATERIAL AND METHOD
This work represents a retrospective study done between June 2008 and may 2009 on a group of 82 patients aged between 24 and 69, 48 men (67%) and 34 women (33%). The patients were hospitalized at the Neurosurgery section of the County Clinical Hospital, Oradea, at the Pelican Hospital, Oradea or they came from the ambulatory. The MRI examination was done at Pelican Medical Centre, Oradea, the acquisition was done with a Siemens apparatus having a 1.5 T power. On the MRI examination I traced signs of the disc degenerations, the bone degenerative modifications, the link with the posterior longitudinal ligament and the radicular-disc conflict.

The lumbar spinal cord radiography was done with a digital radiography apparatus Swis-ray or Siemens, I traced the changes in spindle of the spinal cord, the intervertebral space and signs of disk arthrosis.

RESULTS AND DISCUSSIONS
The patients were diagnosed with lumbar disc hernia in different stages of evolution through lumbar spinal cord radiography and through MRI examination. The placements of the lesions were illustrated in the following picture

From the analysis of this data results in the most frequent placements were at the L4-L5 and L5-S1 (81.21%)

The lumbar spinal cord radiography does not highlight the disc hernia but suggests its presence through indirect signs these are united in the classical tirade Barr that includes scoliosis, reduced physiological lordosis, narrowing of the intervertebral space.(1,2)

The simultaneous presence of the three elements in our study was found at 44 patients, a sum that represents 53, 65% of the patients.

The disc hernia is accompanied by other degenerative modifications visible at the radiography;(1) these are represented by marginal osteophytosis (visible at 62 patients-75,
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60%), osteosclerosis of the vertebral plate (present at 71 patients- 86, 58%), both associated in our study were found at 49 patients- 59, 75%.

Articular instability characterized by small displacements of the vertebral body, mostly visible at “functional” radiography (in hyperflexion or hyperextension) constitutes another suggestive sign for the disc hernia;(5) this was present at 29 patients- 35.36 % of our study.

The elements followed at MRI examination were:
- disc degeneration
- bone degenerative modifications
- the link with the posterior longitudinal ligament
- disc-radicular conflict

Disc degenerative modifications are intercepted in incipient stages that is: the MR signal changes characteristically, the opening of the pulpy nucleus and of the internal part of the fibber ring determines the fading and then the loss of the hyper signal in T2, these structures becoming unable to be separated from the external Sharpey fibbers of the fibber ring.(6,7) Subsequently, concentric, radial or transversal cracks of the fibber ring can become visible due to their liquid content as linear areas in hyper signal T2 or after the gadolinium.(6,8) Disc degeneration was also found at 79 patients from our study (96,34%) and was associated with the decrease in disk height at 68 patients(82,92%).

Disc deterioration is associated with the alteration of the cartilaginous plate that separates the fibber ring from the vertebral plateau. Modic described and classified the changes in signal at the level of vertebral bone marrow adjacent to the cartilaginous plateau in three types that reflect the stage of disc degeneration.(9,10)

- Type I- early disc degeneration; signal of liquid-inflammatory type: hypersignal T2 aspect, hypo signal T1; histologically, it means the interruption and cracking of the cartilaginous plateaus and the presence of the fibrovascular tissue at the adjacent bone marrow level and sometimes at the disk space level; it is a reversible stage or it can evolve towards type II.
- Type II- fat type of signal of the vertebral plateaus – aspect in hyper signal T1 and T2; it is due to medullar involution; it is an irreversible stage and it is always followed by the reduction of the of the disc’s height.
- Type III- fibber type of signal- aspect of hypo signal in T1 and T2- it corresponds to the disappearance of the bone marrow in the regions adjacent to the disc degeneration where the processes of reactionary bone reconstruction are established; it corresponds to the stage of compression of the vertebral plateaus visible on the standard radiography.

In our study we have come across the following modifications of the vertebral plateaus:

**Picture no. 3. Sagital section in T2- disc dehydration L4-L5**

**Picture no. 4. Modic modifications in the studied lot**

**Picture no. 5. Modic modifications tip I**

**Picture no. 6. Modic modifications tip II**

**Picture no. 7. Modic modifications tip III**

After the report with the posterior longitudinal ligament, disc hernias can be:
- Subligamental –when this is intact
- Transligamental – the ligament is interrupted
- Excluded- the ligament is interrupted (4,11)

The stages of the disc hernia are: diffuse disc bulging, protrusion, extrusion, sequestration.(1,3,6) These can be median when the hernied material compresses the marrow or paramedian when both the marrow and the spinal nerve root unil or bilateral are compressed. In the lateral disc hernia or the foraminal one the root of the spinal nerve is compressed.

When the disc hernia exceeds the posterior longitudinal ligament, we are talking about transligamental disk hernia. Here, the hernied part is contained by the external fibbers of the fibber ring and by the posterior longitudinal ligament.
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ligament.(1,4,8)

Picture no. 8. Axial section T2 L5-S1 - left foraminal disc hernia

In the case of disc hernia with free parts, a part of the disk penetrates the posterior longitudinal ligament and freely migrates in the spinal channel, either the cranial or the caudal one. Mentioning the location of the sequester is important for the surgical approach.(3,4)

Picture no. 9. Axial section T2- right paramedian discal protusion

Picture no. 10. Sagital section T2- transligamental hernia L4-L5

In our study, the allotment of the injury was the following: median hernia – 28 patients- 34.14%, paramedian hernia 38 patients- 46.34%. Excluded hernia with free fragment (sequester) was found at 16 patients- 19.51%

The disc radicular conflict was present at 45 patients, which represents 54.87% of the total, that is:
- On the left side – at 27 patients (60%)
- On the right side – at 29 patients (64.44%)
- Bilateral- at 9 patients (20%).

CONCLUSIONS

1. Median/paramedian subligamental disc hernia was the most frequent in our study and more precisely at L4-L5 and L5-S1 level, where the least resistant area of the posterior longitudinal ligament is found.

REFERENCES