PSİDOİNTRADURAL/İNTRARADİKÜLER DİSK HERNİASYONU: BİR VAKA SUNUMU VE LİTERATÜRÜN GÖZDEN GEÇİRİLMESİ

Zahir KIZILAY¹, Elif BOLAT¹, Abdullah TOPÇU², Feridun ACAR¹

ÖZET


Anahtar sözcükler: Intradural disk herniasyonu, intraradiküller disk herniasyonu, lomber disk hernisi.

Pseudointradural/Intraradicular Disc Herniation: A Case Report and Review of the Literature.

SUMMARY

Intraradicular disc herniation is a special subtype of intradural disc herniation. Although many theories have been suggested about the formation of intradural discs, the pathophysiology of this pathological state hasn't been explained exactly yet. This state has been classified on the basis of dural anatomy and separated into two subgroups as type A and B. There is no specific technique or neuroradiological picture of diagnosing intradural intraradicular disc herniation in the preoperative process. Because of this, the patients are mostly diagnosed intraoperatively and they are even diagnosed in next operations after failed back surgery. In this case report we presented the clinical and radiologic features of a 54 year old female patient with the applying symptom of left sciatalgia and with no specific findings in her preoperative imaging studies and the literature has been reviewed.

Key words: Intradural disc herniation, intraradicular disc herniation, lumbar disc herniation.

Many etiological factors have been suggested for the formation of intraradicular disc herniation. Despite these etiological factors, the formation mechanism of intraradicular disc herniation isn't been exactly understood yet ¹. Intraradicular disc herniation has been firstly described by Barbera et al in 1984 ². Twenty three intraradicular disc herniation cases have been reported until 2009 ³. In this paper, the twenty fourth patient with pseudointradural/ intraradicular disc herniation will be reported and the literature will be reviewed.

CASE REPORT

A fifty-four year-old female patient applied to University Neurosurgery Clinic with the complaints of pain in left leg extending from hip to heel and numbness extending from calf to plantar surface of left foot. It was learned from her history that her back pain complaint had begun two months ago. Her back pain had decreased gradually and left leg pain and numbness had begun two weeks ago. The patient had applied to a health center and medical treatment. But her complaints had persisted despite medical treatment then, she had applied to our clinic. Physical examination revealed Laségue’s sign positive at 30 degrees on left leg, hypoesthesia in left S1 dermatome and decreased of left Achilles tendon reflex. The patient was interned and we performed functional lumbar X-RAY, 3D lumbar CT and lumbar MRI. MR imaging of the lumbar spine showed (Figure 1,2) narrowing of L4-5 disc level, increased in signal density secondary to L4-L5 end plate degeneration (Modic type1 degeneration), sequestrated fragment at the left S1 root configuration seen on T2-weighted axial image (Figure 3). Epidural fat tissue was observed between the corpus dorsal surface and ventral surface of S1 nerve root. After complete the necessary examinations, the patient underwent surgery. We performed left L5 hemilaminectomy and left S1 foraminotomy with a surgical microscope. Left S1 nerve root had a different colour, hard and immobile in the entrance of left S1 nerve root canal. Dura was ecarted medially and when we controlled the epidural space, although we didn't see adhesion. We observed a dural defect on ventrolateral of left S1 nerve root's axilla. When dura was incised by a nerve hook we saw intraradicular soft disc. The sequestered intraradicular disc was removed totally and then the mobility of left S1 nerve root increased. Dura was ecarted medially and we looked up L5-S1 disc level. There was only bulging in this level. There was no cerebrospinal fluid outflow from dura defect during valsalva maneuver. The incision was closed in anatomic plan. Her pain completely disappeared after surgery. She was taken into physiotherapy
Psödointradural İntraradiküler Disk Herniasyonyu

programme. She was discharged on the postoperative fifth day.

Intradural disc herniation is a rare pathological entity that may have catastrophic results like conus medullaris syndrome. In 1942, Dandy first reported an intradural disc herniation among 300 patients who underwent surgery for lumbar disc herniation \(^{10}\). Intradural disc herniation is seen in cervical spine in the ratio of \(\%2\), in thoracic spine \(\%5\) and in lumbar spine, especially at the L45 levels, \(\%92\) \(^{5,6,17,18,22,25}\). Its incidence alters between \(\%0.3-1.5\) \(^{5,6}\). Mut et al. \(^{3}\) classified intradural discs on the basis of spinal dural anatomy in 2001. Type-A herniated disc is in dural sac and type-B the herniated disc is located in preganglionic region of nerve root in dural sheet \(^{3,6,18,25}\).

Intraradicular disc herniation is a special and rare form of intradural disc herniation \(^{5,6,17,28,22}\). It was first described by Barbera et al. \(^{2}\) in 1984. In 2004, Özdemir et al. \(^{3}\) found a total 16 cases intraradicular lumbar disc herniation in the literature and added two new cases. Then, two cases intraradicular lumbar disc herniation were described by Karabekir et al. \(^{12}\). Then, further a new case with intradural intraradiculer lumbar disc herniation was diagnosed intraoperatively by Özer et al. \(^{4}\). In 2008, Turgut et al. \(^{4}\) found a total twenty one cases intraradicular lumbar disc herniation in the literature and added one new cases. We found only 23 cases of intradural intraradiculer lumbar disc herniation in the literature and the last case has been reported by Akhaddar et al. \(^{16}\). Five of the cases had been operated because of failed back surgery and it had been understood peroperatively that they had intraradicular disc herniation \(^{5,7,15}\). Only myelography was performed for five cases \(^{2,8,14,16,17}\). CT-myelography was performed for one case \(^{13}\). Myelography and discography was performed for one case \(^2\). Karabekir et al. \(^{12}\) reported the first L3 intraradicular disc herniation in the literature. There was only one case with L3 nerve root and only two cases with L5 nerve root involvement and the others involvement was S1 nerve root \(^{14}\). Özer et al. \(^{6}\) suggested the term of 'pseudo intradural/intraradiculer disc herniation' in 2007. They reported in this description that only outer sheet of dura is torn and after removing the sequesterated disc fragment no cerebrospinal fluid outflow occur.

A lot of theories had been suggested about the etiology of intradural/intraradiculer disc herniation.

Figure 1 ve 2. Increase in signal density secondary to L4-L5 end plate degeneration (Modic type1 degeneration) and narrow of L4-5 disc level.

Figure 3. Sequesterated fragment at the left S1 nerve root configuration seen on T2-weighted axial image.

DISCUSSION

Intradural disc herniation is a rare pathological entity that may have catastrophic results like conus medullaris syndrome. In 1942, Dandy first reported an intradural disc herniation among 300 patients who underwent surgery for lumbar disc herniation \(^{10}\). Intradural disc herniation is seen in cervical spine in the ratio of \(\%2\), in thoracic spine \(\%5\) and in lumbar spine, especially at the L45 levels, \(\%92\) \(^{5,6,17,18,22,25}\). Its incidence alters between \(\%0.3-1.5\) \(^{5,6}\). Mut et al. \(^{3}\) classified intradural discs on the basis of spinal dural anatomy in 2001. Type-A herniated disc is in dural sac and type-B the herniated disc is located in preganglionic region of nerve root in dural sheet \(^{3,6,18,25}\).

Intraradicular disc herniation is a special and rare form of intradural disc herniation \(^{5,6,17,28,22}\). It was first described by Barbera et al. \(^{2}\) in 1984. In 2004, Özdemir et al. \(^{3}\) found a total 16 cases intraradicular lumbar disc herniation in the literature and added two new cases. Then, two cases intraradicular lumbar disc herniation were described by Karabekir et al. \(^{12}\). Then, further a new case with intradural intraradiculer lumbar disc herniation was diagnosed intraoperatively by Özer et al. \(^{4}\). In 2008, Turgut et al. \(^{4}\) found a total twenty one cases intraradicular lumbar disc herniation in the literature and added one new cases. We found only 23 cases of intradural intraradiculer lumbar disc herniation in the literature and the last case has been reported by Akhaddar et al. \(^{16}\). Five of the cases had been operated because of failed back surgery and it had been understood peroperatively that they had intraradicular disc herniation \(^{5,7,15}\). Only myelography was performed for five cases \(^{2,8,14,16,17}\). CT-myelography was performed for one case \(^{13}\). Myelography and discography was performed for one case \(^2\). Karabekir et al. \(^{12}\) reported the first L3 intraradicular disc herniation in the literature. There was only one case with L3 nerve root and only two cases with L5 nerve root involvement and the others involvement was S1 nerve root \(^{14}\). Özer et al. \(^{6}\) suggested the term of 'pseudo intradural/intraradiculer disc herniation' in 2007. They reported in this description that only outer sheet of dura is torn and after removing the sequesterated disc fragment no cerebrospinal fluid outflow occur.

A lot of theories had been suggested about the etiology of intradural/intraradiculer disc herniation.
Barbera et al. had pointed that adhesions and congenital weakness in dura might cause the formation of intradural disc herniation. Dandy had proposed that acutely herniated disc might erode the dura after penetrating to the anterior wall of the dura mater. In 1969, Bikla made an anatomical investigation on 40 cadavers. This anatomical investigation revealed dense non-saparable adhesion of the ventral dura to the posterior longitudinal ligament at the L4.5 level in eight of 40 cadavers. It was suggested that adhesions formed congenital or caused by trauma, surgery, inflammation osteophytes or disc protrusion fixed dural sac. In those cases, extruded fragment tore the ventral surface of the dura. This theory only explains the intradural disc herniations at the L4.5 level. For partial intradural disc penetration, Klopfenstein suggested that the disc fragment partial migrated through the dura without sufficient force to penetrate the inner dural layer. But this theory fails to explain how a large disc penetrates through the narrow dural nerve root. In basis of this theory, Akhadar et al. suggested that osteophyte formation may play an important role in this process. Despite these theories the formation mechanism of intradural/intraradiculer disc herniation are still unclear.

Except a few established cases reported in the literature, there aren’t any specific neuroradiological technique or neuroradiological picture to identify the intraduculic disc herniation. Because of this all the cases are diagnosed intraoperatively. We also used three dimension CT and 1.5 tesla MRI for diagnosis but diagnosed intraoperatively.

REFERENCES

Psödointradural/İntraradiküler Disk Herniasyonu

YAZIŞMA ADRESİ

Dr. Zahir KIZILAY
Pamukkale Üniversitesi Tip Fakültesi, Nöroşirurji
Anabilim Dalı, DENİZLİ, TÜRKİYE

E-Posta : kizilayzahir@yahoo.com

Geliş Tarihi : 11.01.2010
Kabul Tarihi : 09.03. 2010