Resorption of a Sequestrated Cervical Disc

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Abstract

In literature cervical disc extrusions are considered by most neurosurgeons a definitive indication for surgery. This approach may stem from a fear of disc fragment migration with neurological deterioration. We report a rare case of cervical disc sequestration with a seldom prognosis which resolved spontaneously in a 2 month follow up on magnetic resonance imaging, emphasizing the efficacy and applicability of conservative treatment in cervical disc herniations. Even with the basic conservative treatment methods we observed the prominent decrease in symptoms and spontaneous total resorption of the sequestrated fragment. Conservative treatment in sequestrated cervical discs with no neurological deficit can be an alternative therapeutic approach with the guidence of MRI.

Key Words: Conservative treatment, Cervical disc sequestration, Magnetic resonance imaging.

Introduction

Cervical disc herniations typically cause compression of cervical root and/or spinal cord presenting with radiculopathy and/or myelopathy. The spontaneous resolution of herniated discs in the lumbar region, frequently sequastration type lesions, have been documented[1]. However, the conservative management of patients exhibiting magnetic resonance evidence of cervical disc herniation, with follow up magnetic resonance scans has received less attention in the literature. This may be due to potential risc of the patient developing permanent neurological deficits secondary to myelomalacia and possible cord atrophy[2]. In this report we present a case of sequestration type cervical disc herniation showing spontaneous resorption on magnetic resonance imaging upon two month follow up with conservative treatment.

Case Report

A 54 year old white man presented with a 2 month history of neck pain radiating to left shoulder, and numbness in the left hand. He was a retired teacher. He had no history of trauma and weakness. He stated an increase of symptoms with cold exposure. His past medical history included upper gastrointestinal bleeding (twice), multiple lumbar disc protrusion, nephrolithiazis and surgery for squamous cell carcinoma of the lower lip.

On physical examination left lateral flexion of the neck was painful. There was no muscle weakness on manual muscle strength testing. Deep tendon reflexes were preserved in ankle, knee, wrist and elbow. Patient had no sensory deficit, no fasciculation, atrophy or upper motor neuron signs. Physical examination of the shoulder was normal. Tests for carpal tunnel syndrome were bilaterally negative.

Magnetic resonance imaging of the cervical region revealed a mass like lesion in the epidural space at the C6-7 level. There was also posterior protrusion at the level of C5-6 disc without neural compression (Fig 1).

Conservative treatment was started including local heat application, nonsteroidal anti inflamatory drugs and myorelaxant pharmacotherapy, isotonic and isometric exercises for neck. He was advised to use soft cervical collar when long term neck flexion and extension was needed.. He was followed up by two week intervals routinely.

On the follow up visits neck pain and numbness showed a gradual improvement. The need for analgesics decreased from everyday to once every 3-4 days on the second visit. The detailed neurological examination was in normal range on each visit. At the end of the second month he had no more numbness. Neck pain was still present in a much weaker intensity, but he had no need for analgesic treatment. Taking in account the risk of myelopathy due to the compression of the sequester,

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Bibliography
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follow up magnetic resonance imaging scan was performed just 2 months later.The control MRI revealed that the sequestrated disc fragment was almost totally resorbed (Fig 2). There were paramedian protrusions of the C5-6, C6-7 discs, and newly formed diffuse bulging at the level of C7-T1. Two years later control magnetic resonance imaging showed total resorption of the sequestrated fragment and multiple protrusions at C5-6, C6-7, C7-T1 levels (Fig 3).

Discusssion

In 1945 Key first documented spontaneous resorption of herniated disc by myelography[3]. Forty years later Teplick and Haskin demonstrated resolution of a herniation by computed tomography[4]. However similar studies generally focus on lumbosacral region. Very few cases of spontaneous resorption of cervical disc herniation have been documented by magnetic resonance imaging[4]. Bush et al have documented spontaneous resorption of cervical disc herniation on 12 of 13 patients on magnetic resonance imaging presenting with cervical radiculopathy. They reported that these patients were treated with serial periradicular and epidural corticosteroid injections and needed a mean of 12 month follow up (range 4-31 months). No such injections were needed in our patient.

Federico presents spontaneous regression of cervical disc herniations on magnetic resonance imaging in four patients. The shortest documented time of resorption in this clinical study was 10 months, being 24 months for two of the patients and 36 months for the other. The follow up MRI after 10 months showed resolution of the disc with residual disc bulge remaining. Almost total resorption of the sequester just in the second month was observed in our patient. Federico also emphasized that spontaneous regression tends to occur in relatively young patients especially below 45[2]. Our patient was 54 years old which was an older age to expect for a spontaneous regression, making this case more peculiar. Mochido et al have reported spontaneous regression of cervical disc herniations on magnetic resonance imaging in 40% of 38 patients[5]. They stated that the tendency toward regression might be more active in the early stages, because at this stage herniation may include the expanded nucleus pulposus, haematoma and adjacent tissue reaction. Regression in part might result from dehydration of expanded nucleus pulposus and resorption of haematoma. However non of these 38 patients were clearly outlined as sequestration type cervical herniation, unlike this case. When previous studies are compared, it can be said that the tendency for cervical disc herniation lesions to under go regression is less than that for lumbar disc herniation[5,6]. One reason for this difference may be different percentage of sequestration type lesions in lumbar and cervical regions. Another reason may be the difference

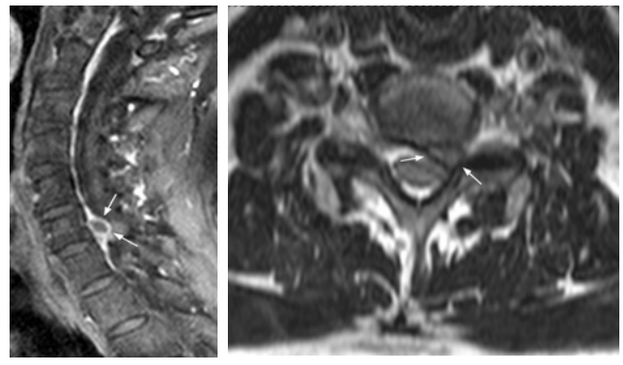

Fig 1. Left: Peripheral enhancement on contrast enhanced T1-weighted sagittal image showing sequestration (arrow). Right: T2-weighted axial image shows the lesion isointense with the nucleous pulposus and spinal cord (arrow). There is obliteration of subarachnoid space, left mediolateral cord compression and narrowing of left neural foramen.

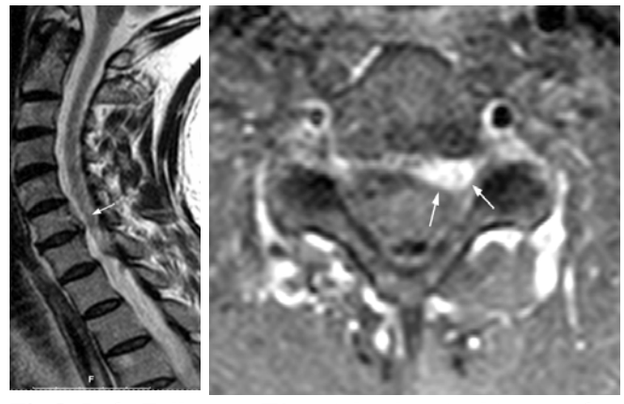

Fig 2. Left: Follow up T2-weighted sagittal image after 2 months shows prominent regression in the mass like appearence of the sequestrated disc in the subarachnoid space (arrow). Right: Two months later follow up contrast enhanced T1-weighted axial image represents almost total resorption of the sequestrated fragment (arrow).

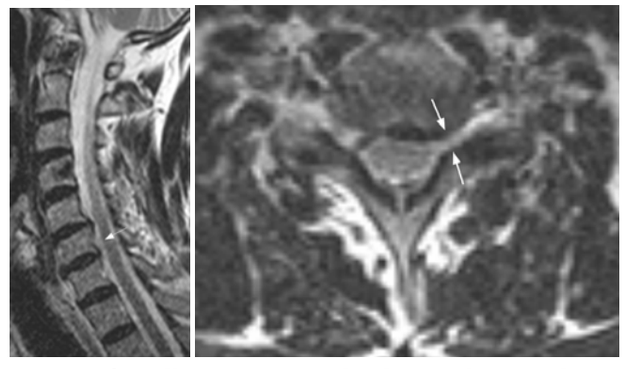

Fig 3. Left: Follow up T2-weighted sagittal image shows complete resorption of the sequestrated disc (arrow). Right: Follow up T2-weighted axial image after 2 years demonstrates the left paracentral protrusion at the C6-7 level causing narrowing of subarachnoid space and ipsilateral neural foramen (arrow). No compression on spinal cord is observed.

in composition of herniated discs. The histologic characteristics of cervical disc herniations probably differ from that of lumbar disc herniations. Most cases of cervical disc herniations include end plate cartilage mainly composed of hyaline in addition to nucleus pulposus. Carreon et al found that resorption of end plate cartilage was really hard[7]. However in our case we observed complete resorption of sequestrated cervical disc lesion in two months duration which may be accepted relatively and unexpectedly short.

Takui et al conducted a study on surgically removed lumbar disc sequestration fragments. Their study revealed that the main histologic feature common to epidural free fragments of herniated disc was macrophage infiltration and vascularization. When compared with cadaveric disc fragments it can be suggested that most of the vesssels present in the sequestrated disc had newly formed after herniation, probably in continuity with the epidural vasculoconnective tissue. In addition fibrous scarring was not observed in the fragments examined suggesting that a process of organization is not the main course of regression. Instead a kind of absorption process is predominant[8].

Conservative treatment is a common choice for treatment of patients with lumbar disc herniations and success rate is very high, by contrast there have been few reports regarding conservative treatment of cervical disc herniations . Matsumoto M. et al demonstrated that conservative treatment was effective in 63% of patients. 59% of the patients who were treated conservatively experienced spontaneous regression of disc herniation with concommitant resolution of their neurologic symptoms. Moreover there were no signs of difference in the final results between the patients who were initially treated conservatively and those who underwent immediate surgery[9].

Documented cervical disc extrusions are considered by most neurosurgeons a definitive indication for surgery. This approach may stem from a fear of disc fragment migration with neurological deterioration[2]. Manabe reported the results of surgical treatment for 22 patients having cervical disc sequestration.He stated that indication for surgery in his study was progressive worsening of clinical status in spite of conservative treatment. However no details about the content and duration of the conservative treatment were present in the article[10]. Even with the basic conservative treatment methods we observed the prominent decrease in symptoms in our patient. No invasive method including epidural injection were needed.

A full symptomatic regression was not achieved in this case despite resorption of the sequestrated fragment. It was reported recently that chemical mediators and inflammatory agents associated with disc herniation play a role in mechanism of nerve injury as well as in mechanical compression[11]. Moreover our patient had multiple disc herniations at other cervical levels. These may be the possible reasons of a lacking complete recovery. This case demonstrates the important role of magnetic resonance imaging in diagnosis and follow up of sequestration type of cervical disc lesions.

In summary we report a rare case of cervical disc sequestration with a seldom prognosis, which resolved spontaneously in two months follow up on magnetic resonance imaging, emphasizing the efficacy and applicability of conservative treatment in cervical disc herniations. This case is also important in the fact that despite a sequestrated disc fragment causing compression on spinal cord, patient never experienced neurological deficits.

References

1. Mochida K, Synomiya K, Komori H, Furuya K. Natural history of cervical herniation observed by MRI. Proceedings of 23rd annual meeting of Cervical Spine Research Society. Rosemond: Cervical Spine Research Society, 1995:75.
2. Federico C, Harvey W, Setti R. The spontaneous resorption of cervical herniated discs. Journal of Clinical Neuroscience 2001; 8(6): 542-6.
3. Key JA. The conservative and operative treatment of lesions of the intervertebral discs in the low-back. Surgery 1945; 17:291-303.
4. Teplick JG, Haskin ME. Spontaneous regression of herniated nucleus pulposus. American Journal of Roentgenology 1985; 145 (2): 371-5.
5. Mochida K, Komori H, Okawa A, Muneta T, Haro H, Shinomiya K. Regression of cervical disc herniation observed on magnetic resonance imaging. Spine 1998; 23 (9): 990-95.
6. Komori H, Shinomiya K, Nakai O, et al. The natural history of herniated nucleus pulposus with radicular pain. Spine 1996; 21: 225-9.
7. Carreon LY, Ito T, Yamada M, Ikuta F, et al. histologic changes in the disc after cervical spinal trauma: Evidence of absorption. Journal of Spinal Disorders 1996; 313-6.
8. Ito T, Yamada M, Mitsunori M, Ikuta F, Fukada T, Hoshi S, Kawaji Y, Uchiyama S, Homma T, Takahashi H. Histologic evidence of absorption of sequestration type herniated disc. Spine 1996; 21(2): 230-4.
9. Matsumoto M, Chiba K, Ishikawa M, Maruiwah H, Fujimura Y, Toyama Y. Relatinships between outcomes of conservative treatment and magnetic resonance imaging findings in patients with mild cervical myelopathy caused by soft disc herniations. Spine 2001; 26 (14): 1592-8.
10. Manabe S, Tateishi A. Epidural migration of extruded cervical disc and its surgical management. Spine 1986; 11(9): 873-8.
11. Minamide A, Tamaki T,Hashizume H, Yoshida M,Kawakami M, Hayashi N. Effects of steroid and lipopolysaccharide on spontaneous resorption of herniated intervertebral discs. An experimental study in the rabbit. Spine 1998; 23 (8): 870-6.