



Resorption of a sequestered cervical disc confirmed by magnetic resonance imaging: long term follow-up. Case report

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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 two-month follow-up on magnetic resonance imaging (MRI), 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 sequestered fragment. Conservative treatment in sequestered cervical discs with no neurological deficit can be an alternative therapeutic approach with the guidance of MRI.

KEY WORDS: Magnetic resonance imaging - Hernia - Spinal cord.

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 sequestration 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

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in the literature. This may be due to potential risk of the patient developing permanent neurological deficits secondary to myelomalacia and possible cord atrophy.²

This report presents the case of cervical disc herniation showing spontaneous resorption on magnetic resonance imaging (MRI) upon two-month follow-up with conservative treatment.

Case report

A 54-year-old white man presented with a two-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 and noticed an increase of symptoms with cold exposure. His past medical history included upper gastrointestinal bleeding (twice), multiple lumbar disc protrusion, nephrolithiasis 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 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.

MRI of the cervical region revealed a mass like lesion in the

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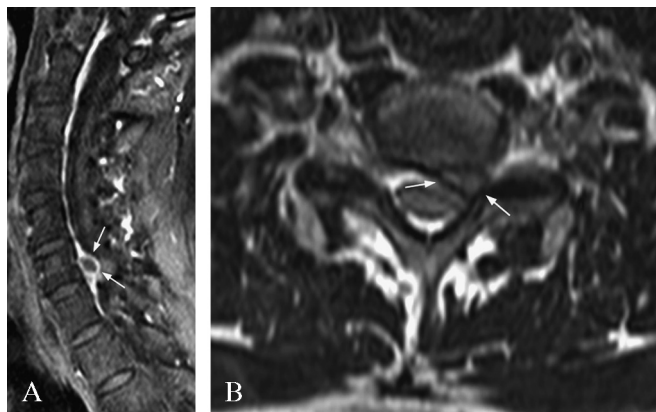


Figure 1.—A) The lesion showed peripheral enhancement on contrast enhanced T1-weighted sagittal image which is in favor of sequestration (arrow); B) T2-weighted axial image shows the lesion isointense with the nucleus pulposus and spinal cord (arrow). There is obliteration of subarachnoid space, left mediolateral cord compression and narrowing of left neural foramen.

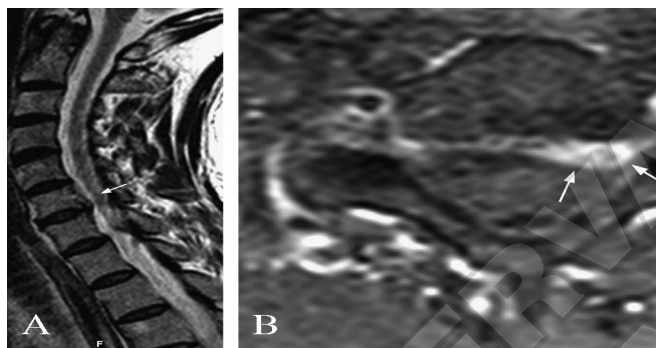


Figure 2.—A) Follow-up T2-weighted sagittal image after two months shows prominent regression in the mass like appearance of the sequestered disc in the subarachnoid space (arrow); B) two months later follow-up contrast enhanced T1-weighted axial image represents almost total resorption of the sequestered fragment (arrow).

epidural space at the C6-7 level. There was also posterior protrusion at the level of C5-6 disc without neural compression (Figure 1).

Conservative treatment was applied to the patient including local heat application, nonsteroidal anti inflammatory 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 three-four days on the second visit. The detailed neurological examination was in normal range on each visit. At the end of the second month he did not suffer from

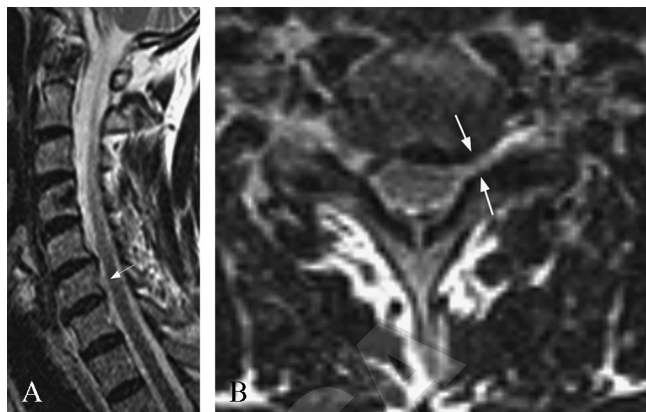


Figure 3.—A) Follow-up T2-weighted sagittal image shows complete resorption of the sequestered disc (arrow); B) follow-up T2-weighted axial image after 2 years demonstrates the left paracentral protrusion at the C6-7 level causing narrowing of subarachnoid space and ipsilateral neural foramen (arrow). No compression on spinal cord is observed.

numbness anymore. Neck pain was still present with a much weaker intensity, but he had no need to analgesic treatment. Taking into account the risk of myelopathy due to the compression of the sequester, follow-up MRI scan was performed just two months later. The control MRI revealed that the sequestered disc fragment was almost totally resorbed (Figure 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 MRI showed total resorption of the sequestered fragment and multiple protrusions at C5-6, C6-7, C7-T1 levels (Figure 3).

Discussion

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 MRI.⁴ Bush *et al.* have documented spontaneous resorption of cervical disc herniation on 12 of 13 patients on MRI 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 MRI 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 emphasizes that spontaneous regression tends to occur in relatively young patients especially below 45.² Our patient is a 54-year-old which is 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 MRI 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, hematoma and adjacent tissue reaction. Regression in part might result from dehydration of expanded nucleus pulposus and resorption of hematoma. However, none of these 38 patients were clearly outlined as sequestration type cervical herniation, unlike the case we present. When previous studies are compared, it can be said that the tendency for cervical disc herniation lesions to undergo 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 in composition of herniated discs. The histological characteristics of cervical disc herniations probably differ from that of lumbar disc herniations. In most cases 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 sequestered cervical disc lesion in a two-month 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 histological 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 vessels present in the sequestered disc had newly formed after herniation, probably in continuity with the epidural vasculo-connective 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 the 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 *et al.* demonstrated that conservative treatment was effective in 63% of patients. Fifty-nine percent of the patients who were treated conservatively experienced spontaneous regression of disc herniation with concomitant 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 of the 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 of symptoms in our patient. No invasive method, including epidural injection, was needed.

A full symptomatic regression was not achieved in this case, despite resorption of the sequestered fragment. Recently, it has been reported that chemical mediators and inflammatory agents associated with disc herniation play a role in the mechanism of nerve injury as well as in mechanical compression.¹¹ Moreover, our patient had multiple disc herniations at other cervical levels. That is why he did not recover completely. This case demonstrates the important role of MRI in diagnosis and follow-up of cervical disc lesions.

Conclusions

In conclusion, this case report presents a cervical disc sequestration with a rare prognosis, which resolved spontaneously in two months, as evidence

by the MRI, emphasizing the efficacy and applicability of conservative treatment in cervical disc herniations. This case is also important as, despite a sequestered disc fragment causing compression on spinal cord, the patient never experienced neurological deficits.

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