Cervical disc, mimicking nerve sheath tumor, with rapid spontaneous recovery: a case report

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Abstract The study design includes a case report and clinical discussion. The potential of acute disc herniations to regress spontaneously has been previously reported. However, the initial radiological presentation can be misleading, leading to therapeutic pitfalls, especially when the presence of myelopathy calls for early intervention. We present the case of a 46-year-old woman with a cervical intraspinal enhancing mass, associated enhancement of the C6 root and myelopathy, leading to the presumptive diagnosis of a nerve sheath tumor. The patient was offered surgery, which she denied. The patient returned 7 weeks later with significant clinical improvement. A subsequent magnetic resonance imaging depicted a herniated cervical disc and regression of myelopathy. Although spontaneous regression of disc prolapse and myelopathy have been previously reported, the initial radiological presentation and the short period of regression in this case highlight the need for a thorough understanding of the natural course of cervical disc herniations. Nonsurgical conservative observation should be considered an option for treatment for some cervical disc herniations that are likely to regress for very specific and predictable reasons.

Keywords Cervical disc · Herniation · Disc regression · Tumor · Nonoperative management

Introduction

The spontaneous resolution of a cervical herniated disc is increasingly documented in the international literature [1, 2]. However, radiographically demonstrated regression of a cervical disc herniation with myelopathic signs is extremely rare, in part due to the fact that these patients receive early surgical treatment [3]. Furthermore, the issue of confusing a cervical disc with an intracanalicular tumor, although rare, is of clinical and surgical importance.

Materials and methods

A 46-year-old woman presented with a 3-week history of gradual-onset neck pain and right brachialgia, associated with hand numbness and mild grasping weakness. No history of trauma was reported. Magnetic resonance imaging (MRI) of the cervical spine revealed an intracanalicular mass lesion at the C5–C6 level with C6 root enhancement and adjacent cord edema, leading to the presumptive diagnosis of a nerve sheath tumor (Fig. 1a, b). The patient was informed about the necessity of an operation; however, she opted for conservative treatment.

Results

Within 7 weeks, the patient's symptoms abided almost completely. A new MRI scan depicted significant improvement of the myelopathy and root edema. The lesion itself

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Fig. 1 T1-weighted, contrast-enhanced MRI image, sagittal (a) and axial (b) view, showing the acutely prolapsed cervical disc, clearly mimicking a nerve-sheath tumor

clearly represented a prolapsed cervical disc (Fig. 2a, b). On the basis of clinical and imaging improvement, we concluded that this was an acute disc prolapse followed by epidural hemorrhage.

Discussion

Although MRI expanded the diagnosis of central nervous system ailments by depicting soft tissues in unprecedented

Fig. 2 T1-weighted, contrast-enhanced MRI image, sagittal (a) and axial (b) view, 7 weeks later. The disc prolapse is now obvious. No enhancement is present and only minimal pressure remains on the right side

clarity, there are still some cases where separation and identification of coinciding local pathologies can be challenging. Soon after onset of symptoms, cervical disc herniations detected through MRI may include the expanded nucleus pulposus, hematoma and adjacent tissue reaction [4]. In particular, disc herniation may be associated with hemorrhage from annulus rupture or epidural hematoma alongside with root or cord edema [5]. In such cases, enhancement may be misleading, as was in our case,

leading to the presumptive diagnosis of a nerve sheath tumor.

The mechanisms of extruded discs regression have been previously investigated. In essence, when material from the nucleus pulposus escapes into the epidural space it quickly expands, due to the hydrophilic properties of the rich in proteoglycans nuclear material [6]. In this early phase of engorgement, root and cord compression are most likely to occur, leading to the prominent symptoms in the early stages of the disease's natural history. Coinciding epidural hemorrhage may enhance symptoms. With time, however, autolysis followed by loss of the proteoglycans' hydrophilic capacity leads to herniated material desiccation and shrinkage [6]. Additionally, hemotaxis of inflammatory cells into the epidural space results in neovascularization and phagocytosis of the herniated material [7]. This inflammatory process, usually lasting from several weeks to a few months, correlates with the period of clinical improvement [4].

The challenge for the clinician is to identify those herniations that are more likely to spontaneously regress; reportedly, the type of the herniated material and the extrusion pattern seem to play an important role [4]. Extruded discs may have a more favorable nonoperative prognosis than contained disc pathology, for the reasons mentioned above [8]. Depending on the anatomic position of herniated discs, those classified as migration-type on MRI sagittal view (these being discs not existing beyond the end-plates) and lateral-type on axial view, exhibit regression more frequently than protruded-type (extending beyond the end-plates on sagittal view) and central-type herniations [4]. Although generalizations from these data are inappropriate, it becomes obvious that nonsurgical care may be considered as an option for the treatment of certain patients with cervical disc extrusion and radiculopathy. In the presence of myelopathy, however, doctors adopt more aggressive treatment strategies and are eager to operate. This is due to the fact that the cervical disc hernia that causes myelopathy is considered a major threat for neurological deterioration by most neurosurgeons and a significant criterion for surgical management.

Our case is of particular significance for more than one reason. It clearly demonstrates clinical and radiological regression of a large herniated cervical disc in one of the shortest periods ever to be reported. Additionally, it emphasizes the fact that an acutely herniated cervical disc may present as an enhancing mass whose true nature may

be difficult to distinguish radiologically. Finally, it suggests that associated myelopathy is not an absolute indication for surgery, especially in herniations that are likely to regress for specific and predictable reasons.

Conclusions

Even in the MRI era, the accurate identification of a depicted cervical intracanalicular enhancing mass can be challenging. The alterations and diversity of tissues presenting in this area when in disease from an acutely herniated disc may cause diagnostic turmoil, where enhancement can be somehow misleading. Although surgery remains the mainstay for treatment of cervical disc herniations with associated myelopathy, conservative treatment may be an option for selected patients with migrating, lateral-type herniations.

Conflict of interest statement None of the authors has any potential conflict of interest.

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