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Case study

What are the possibilities of spontaneous resorption of a thoracic disc herniation occupying more than 20% of the spinal canal in the asymptomatic subject? Comparative study

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ABSTRACT

Thoracic disc herniation is a rare pathology for which surgical treatment is difficult. The discovery of asymptomatic or only slightly symptomatic lesions can be problematic, especially in cases of marked canal stenosis. The possibility of spontaneous resorption has been documented by a few case reports but there is no study on this subject. Our objective was to compare the clinical and radiological data for two groups of patients with significant thoracic herniation (occupying more than 20% of the spinal canal): one showing spontaneous resorption (*group 1*) and the other persistence of the lesion during follow up (*group 2*). The physiological processes of thoracic herniation are also discussed. We present a retrospective study of our database of patients with thoracic hernia. Only subjects who initially showed signs of slight or absent myelopathy (Frankel D or E) were included. Group 1 and 2 are composed of 12 and 17 patients respectively. The clinical and radiological data are compared. The two groups were not different for the following parameters: age, sex ratio, disc calcification, size, trajectory, side, hernia level. Other parameters were evaluated and were not associated with a higher rate of resorption: disc calcification, intramedullary hypersignal in T2 sequence, calcification of the posterior common vertebral ligament, calcification of another disc and Scheuerman's disease. Asymptomatic thoracic disc herniation is a condition that can disappear spontaneously, even in the case of a large lesion. To date, there are no clinical or radiological data that can predict such an evolution.

1. Introduction

Thoracic disc herniation (TDH) is a condition rarely observed in medical practice. Although radiological series estimate the frequency of this lesion at between 11 and 14.5%, lesions are mostly minimal and asymptomatic [1,2]. The frequency of symptomatic thoracic disc hernias is estimated to be 1 case per million in the general population [3]. The main reasons for consultation are: back pain, intercostal neuralgia (ICN) and myelopathy.

While the need for a surgical procedure is commonly accepted in cases of symptomatic hernia with a sign of myelopathy, the medical management of cases with an asymptomatic or only slightly symptomatic lesion may be debated, especially if the lesion is voluminous, since the risk associated with an intervention is not negligible, ranging from 3.7% to 66.6% of complications in the most recent series [4–9]. A study of the literature on significant TDH (>20% of the spinal canal) revealed a small number of case reports noting spontaneous resorption [10–14]. We report here a series of 12 patients followed between January 1, 2009 and January 1, 2016, who were sent to our center for management of significant TDH (occupying more than 20% of the spinal canal). All of these patients experienced spontaneous resorption of their lesions. The characteristics of this series are compared with those of a cohort of asymptomatic patients with TDH of the same size in whom lesion resorption was not demonstrated during the same follow-up period. The mechanisms that may explain this particular evolution are considered in the discussion.

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2. Methods

2.1. Design

Between January 2006 and January 2016, 132 subjects were referred to our center for thoracic disc herniation. We present a retrospective study using this prospectively established patient database. The inclusion criteria were: referred for TDH > 20% of the spinal canal and absence of signs of severe myelopathy in connection with the hernia during follow up (Frankel E or D). Patients who were seen only once in consultation (2nd opinion, misdiagnosis) were excluded, as were patients who had surgery due to disabling symptoms related to TDH.

Based on radiological follow-up data, 2 groups were formed. Group 1: patients with spontaneous regression of the herniation, and Group 2: patients in whom an aspect of compression persisted. The diagnosis of resorption of the hernia was based on MRI showing total or subtotal disappearance (<5% of the spinal canal) of the initial lesion. A detailed example of two patients belonging to group 1 is given in Figs. 1 and 2.

2.2. Comparison of the two groups

All the patients were seen in consultation and examined by the same practitioner with expertise in the management of these pathologies. The initial diagnosis of TDH was based on a vertebro-medullary MRI and a computed tomography (CT) scan. When there was no evidence of medullary dysfunction, an electrophysiological examination (Somatosensory and Motor Evoked Potentials) was performed in search of subclinical myelopathy. In case of minimal abnormality, the management consisted of clinical, radiological and electriophysiological monitoring. The two groups were compared on the data resulting from these examinations. Concerning the hernia, the following parameters were observed: level, side, calcified character, degree of stenosis of the spinal canal (expressed in percentage), intramedullary hypersignal in MRI T2 sequence with respect to the hernia. Other morphological data from the analysis of the rest of the thoracic spine were noted: second hernia, calcification of other discs, posterior longitudinal ligament calcification, and Scheuerman's disease. The calcified character of the different structures was evaluated on the initial CT scan. Two independent Spine Surgeon reviewed all of radiological data.

Fig. 1. A 51-year-old patient who complained of left-sided intercostal neuralgia secondary to coughing effort. Two and a half months after the onset, she presented neuropathic pain in the left lower limb. No neurologic deficit was found on the day of the consultation. The somesthetic evoked potentials were discretely slowed down; the evoked motor potentials were normal. The CT scan and T2-weighted MRI found a calcified T9-T10 thoracic disc herniation of ascending path (A). The decision taken was supervision. At 8 months, the pain disappeared and MRI confirmed the resorption of the lesion (B). The electrophysiological assessment was unchanged.

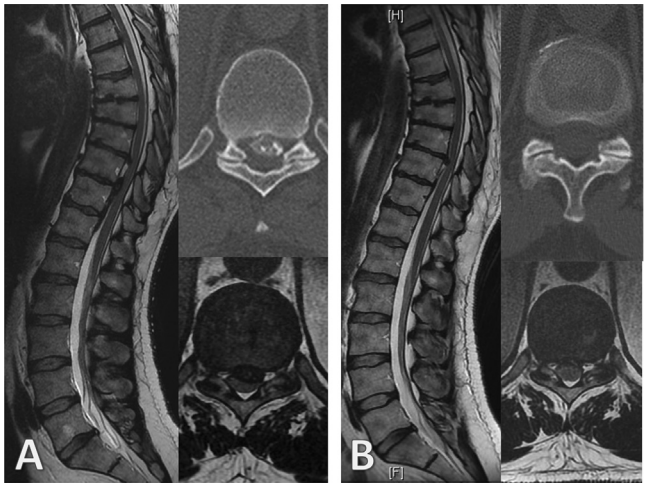

Fig. 2. A 43-year-old patient who described dorsalgia and paresthesia of the lower limbs that appeared after a run. On the day of the consultation, the neurological examination was normal except for the paresthesia, which persisted; there was no associated sensory deficit. The somesthetic evoked potentials showed a discrete slowing of conduction. Initial examinations revealed a large calcified hernia at T10-T11 associated with calcification of the posterior longitudinal ligament, there was another hernia at T9T10 (A). At 5 months of evolution, the symptomatology regressed and the evoked potentials normalized. The radiological assessment confirmed a sub-total regression of the T10T11 not that of T9T10 hernia (B).

2.3. Statistical analysis

All data were presented as mean ± standard deviation (SD) or median (Interquartile range) depending on the normal or abnormal distribution of the data. For the bivariate analysis, the comparison between the two groups relied on percentage comparison tests (chi-square test) for qualitative variables and on mean comparison tests (Student *t*-test) for quantitative variables. Statistical significance was evaluated at $P < 0.05$. Calculations were performed with Statgraphics 233 centurion XVI (Sigma plus, Paris, France).

3. Results

3.1. Clinical results

Group 1 consisted of 12 patients (8 women, 4 men). Their mean age was 49.9 (SD 7.0) years. The characteristics of these patients are shown in Table 1. The symptoms that led to the discovery of these lesions are reported. On average, the follow up was 57.4 (SD 41.9) weeks. Group 2 consisted of 17 subjects (12 women, 5 men). Their mean age was 49.0 (SD 11.5) years. The two groups were not significantly different for age ($p = 0.809$) or sex ratio ($p = 0.900$). At the end of the study, all patients were clinically stable or improved.