CASE REPORT

Unusual case of spinal epidermoid cyst and a concomitant spinal arachnoid cyst

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SUMMARY

A 38-year-old woman presented with a 12-month history of subjective weakness and pain in her legs. Thoracolumbar MRI revealed two spinal intradural cystic lesions at T5–6 and T11 levels, respectively. The lesion located at the T5–6 level was heterogeneously hyperintense on T2-weighted images and heterogeneously hypointense on T1-weighted images. This lesion showed high signal intensity on diffusion weighted MRI (DWI) and low signal intensity on apparent diffusion coefficient images (ADC). According to the MRI findings, we reported this tumour as a spinal epidermoid cyst. The pathology result suggested that the lesion was an epidermoid cyst. The second intradural lesion, at the T11 level, showed a hypointense signal on T1 and hyperintense signal on T2 images. However, in contrast to the superior lesion, this lesion was hypointense on DWI and hyperintense on ADC. We evaluated the second lesion as an arachnoid cyst according to the MRI findings.

BACKGROUND

Spinal arachnoid cysts (SACs) are benign, congenital tumours, and generally classified as intradural-extradural. Intradural SACs may be intramedullary or extramedullary. SACs are usually located at the thoracolumbar region.¹ They are generally asymptomatic.

Spinal epidermoid cysts (SECs) are benign tumours that arise from displaced dorsal midline ectodermal rest.² They comprise 1% of spinal tumours in patients of all ages. Epidermoid cysts are usually congenital. SEC is a rare cause of myelopathy that occurs due to spinal cord compression. Association with other spinal tumours is very rare.³ Concomitant SEC and spinal intramedullary arachnoid cysts have not previously been reported in the same patient. We report an unusual case of SEC that caused myelopathy associated with an intramedullary SAC.

In the literature, differential diagnosis of these two different cystic lesions has been reported. However, we show the concomitance of these two lesions, and arrive at the differential diagnosis using the same images in the same patient.

CASE PRESENTATION

A 38-year-old woman was admitted to our hospital, with a 12-month history of subjective weakness and pain in her legs. She had no previous similar symptom or complaint, and there was no worthy laboratory finding nor surgical history. Thoracolumbar MRI revealed two intradural cystic

lesions. The first was extramedullary at T5–6, and the second was intramedullary at the T11 level. The lesion located at the T5–6 level was heterogeneously hyperintense on T2-weighted images and heterogeneously hypointense on T1-weighted images. This lesion showed high signal intensity on DWI and low signal intensity on ADC (figures 1 and 2), implying restriction of water diffusion. On MRI, gadolinium enhancement was not determined. We described the first lesion as an epidermoid cyst based on MRI. The spinal cord was compressed and displaced anteriorly at the same level due to the tumour. On T2-weighted images, the spinal cord showed high signal intensity related to the myelopathy. The patient underwent surgical treatment and pathology revealed that the lesion was an epidermoid cyst.

The second intradural lesion was at the T11 level with hypointense signal on T1-weighted images and hyperintense signal on T2-weighted images. These signal changes were nearly identical to those of the other lesion. However, in contrast to the superior lesion, the tumour at the T11 level was hypointense on DWI and hyperintense on ADC (figures 1 and 2). There was no contrast enhancement comparable to the superior lesion. The spinal cord was expanded due to the tumour. We evaluated the second lesion as an intramedullary SAC according to the MRI findings.

The lesion at the level T5–6 was removed surgically due to the myopathy. The T11 lesion was also kept under follow-up.

Figure 1 Two intradural cystic tumours at T5–6 (long arrow) and T11 (short arrow) levels. The superior lesion is heterogeneously hypointense on T1- and heterogeneously hyperintense on T2-weighted images. The other lesion is hypointense on T1- and hyperintense on T2-weighted images.

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Figure 2 The lesion at the superior (long arrows) is hyperintense at diffusion images and hypointense on ADC map—means diffusion restriction— There is no diffusion restriction in the lesion located at the T11 level (short arrows).

DIFFERENTIAL DIAGNOSIS

Spinal dermoid cyst, spinal hydatid cyst, spinal neuroenteric cyst and spinal schwannoma, versus SEC.

TREATMENT

The patient underwent surgical treatment. Microscopic examination of the tumour demonstrated the appearance of an epidermoid cyst. Follow-up MRI sessions were planned for the arachnoid cyst.

OUTCOME AND FOLLOW-UP

Fifteen days after the operation, follow-up thoracolumbar MRI was performed. On T2-weighted images, the previous spinal cord compression at T5–6 level was no longer detectable. There was no sign of a residual tumour in the MRI. The dimensions of the arachnoid cyst were the same and the configuration of the cyst was stable.

DISCUSSION

Epidermoid tumours are histologically presented by a mass of desquamated cells. SECs are benign and rare tumours. These tumours are usually congenital and grow slowly. Congenital SECs are often associated with congenital malformations.² These tumours can also occur years after trauma, including lumbar spinal punctures. In our case, there was no congenital malformation on MRI. The patient had a history of neither spinal puncture nor trauma.

MRI can provide accurate identification of these tumours. SECs generally present as T1 hypointense and T2-hyperintense

signals on MRI, similar to cerebrospinal fluid, in most cases.⁴ Comparable to the SEC, arachnoid cysts show the same signal changes on T1-weighted and T2-weighted MRI. On ADC images, arachnoid cysts do not show diffusion restriction, in contrast to epidermoid cysts. As in our case, water diffusion restriction can be helpful in the differential diagnosis of these lesions.

Most SECs typically present at about 35 years of age, and with progressive symptoms, similar to our case. Clinical presentation alters with the extent of lesion and location. Improvements in clinical symptoms often occur 2–3 weeks after surgery. In our case, clinical symptoms were relieved 2 weeks after the operation.

Differential diagnosis of spinal cord lesions can be challenging. We therefore conclude that water diffusion restriction can be helpful in the differential diagnosis of SECs and arachnoid cysts. Our case is important because it shows the concomitance of these two lesions and the arrival at the differential diagnosis in the same images in the same patient.

Learning points

- ▶ Diffusion restriction can be helpful in the diagnosis of spinal epidermoid cysts (SECs).
- ▶ SECs may be associated with other spinal lesions such as intramedullary arachnoid cysts.
- ▶ Clinical findings of epidermoid cysts are usually detected by the age of 35 years.
- ▶ That spinal lesions with characteristics of similar T1-T2 signals may be the result of different histopathological origins should be considered.

Contributors AOC was involved in the study concept and design; MMB was involved in the literature research; HD and AU were involved in the Manuscript preparation; AOC was also involved in the manuscript editing.

Competing interests None declared.

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