Adult-onset intradural spinal teratoma in the lumbar spine: A case report

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ABSTRACT

Intradural spinal teratoma is a very rare tumour that can be associated with dysraphic defects. We report a case of adult-onset intradural spinal teratoma in the lumbar spine. The patient was a 54-year-old female who had chief complaints of a gait disturbance. X-rays showed an enlargement of the interpedicular distance at L3/L4 and spina bifida distal to L4. MRI showed a spindle-shaped tumour between L2 and L5. We performed laminotomy using an ultrasonic surgical knife. Pathological diagnosis of the resected tumour was matured teratoma. The diagnosis of matured teratoma was made because the tumour had no epithelium and a layered structure including prostate tissue, matured fat, cartilage and sweat gland.

Key words: teratoma, spinal tumour, laminotomy arthrodesis due to a left club foot approximately forty years prior. The patient had had low back pain since 1991, with muscle weakness and numbness of lower extremities appearing in August 1996. As her paresis progressed, she became unable to walk alone. She was admitted to our hospital for surgical treatment in June 1997.

She weighed 48 kg and her height was 1.45 m. She had a patch of abnormal hair and a dimple on the mid portion of the back (Fig. 1). Neurological examination revealed a motor weakness below the L4 level, zero or trace in manual muscle testing, and a loss of pain and deep sensation below L5. Perianal sensation was abnormal. Bilateral knee jerks and anal reflex were

Figure 1 Patch of abnormal hair and dimple on the mid portion of the back.

CASE REPORT

The patient was a 54-year-old female who had chief complaints of a gait disturbance with muscle weakness and numbness of the legs. She had a left ankle
diminished and bilateral ankle jerks were absent. The urodynamics examination revealed a neurogenic bladder.

AP view on plain radiographs of the lumbar spine showed an enlargement of the interpedicular distance at L3/L4 and spina bifida distal to L4. Lateral view showed enlargement of the AP diameter at L3/L4.

T1-weighted sagittal view (Fig. 2) of the magnetic resonance image (MRI) showed a spindle-shaped tumour of low- to iso-intensity between L2 and L5, with T2-weighted images revealing a high-intensity tumour. T1-weighted enhanced images (Fig. 3) showed no enhancement by gadolinium-diethylene-triamine penta-acetic acid (Gd-DTPA). Myelography showed a total block by the tumour at the level of L2 (Fig. 4).

The spinal canal was almost completely occupied by the tumour on CT myelography.

We performed laminotomy from L1 to L5 using an ultrasonic surgical knife. Tissue resembling lipoma was found at the L4/L5 level, and hard cystic tissue compressed the cauda equina at L4/L5.

Lipoma-like tissue was resected using spinal cord monitoring by SCEP (spinal cord evoked potential), but since the cystic tumour was adherent to the cauda equina, curettage of the cystic contents was performed. After resection of capsule, the dural defect was repaired with artificial dura and the lamina was reconstructed (Fig. 5). The specimen of resected tumour was 4.5, 1.5, 0.5 cm large, and the contents of the cyst consisted of a greyish atheroma (Fig. 6).

Because the tumour had no epithelium and a layered structure which included cartilage, matured fat, sweat gland, and prostate tissue, a diagnosis of teratoma was made (Fig. 7).

Six months after surgery, motor weakness below the L4 level recovered to fair or good, and sensory disturbance below L5 level improved. The volume of residual urine had decreased gradually.

DISCUSSION

The diagnosis of intradural spinal teratoma consists of approximately 0.1 to 0.2% of all spinal tumours. Including our case, there have been 29 case reports in Japan.1,2 Intraspinal teratomas are most often located posteriorly at the cervical or lower thoracic and upper lumbar regions. Patients are usually young adults and there is no difference in incidence between the sexes.

The reason our patient became symptomatic at this age is unclear, but we suspected that degenerative changes of the lumbar spine produced spinal stenosis.

Teratoma may have both solid and cystic components and may be associated with syringomyelia. Several theories of tumour pathogenesis have been raised in the literature,6 and Koen proposed that the pluripotent embryonic caudal mesenchyme gives rise to teratomas and other congenital tumours due to the dysfunction of several factors that probably involve gene function and cellular inductive interactions.7 The traditional view of tumour pathogenesis is that early in embryogenesis, primordial germ cells from the yolk sac become misplaced, most commonly into midline structures, after which they can give rise to germ cell tumours, including teratomas.
Figure 3  (a) T1-weighted sagittal view of MRI showed a spindle-shaped tumour of low to iso intensity between L2 and L5. (b) T2 weighted sagittal view showed high intensity. (c) T1-weighted enhanced image revealed no enhancement by Gd-DTPA.

Figure 4  (a) Myelography of AP view revealed a total block by the tumour at the level of L2. (b) The spinal canal was almost occupied by the tumour on lateral myelography.
Figure 5  Lipoma-like tissue was resected, but since the cystic tumour was adherent to the cauda equina, curettage of the cystic contents was performed. After resection of capsule, the dura defect was repaired with artificial dura, and the lamina was reconstructed. The white arrow shows artificial dura.

Figure 6  The specimen was 4.5, 1.5, 0.5 cm large, and the cyst contents consisted of a grayish atheroma.
Russell and Rubinstein described teratomas as tumours that contain ectodermal, mesodermal, and endodermal elements. Mature teratomas are composed of well-differentiated elements, and immature teratomas contain primitive elements derived from any or all of the three germinal layers. Wilkins and Rossitch classified intraspinal cystic teratomas as a subset of neuenteric cysts, whereas teratoid and teratomatous cysts were subclassified separately. The term ‘teratoid’ has been used to describe tumours containing either poorly-differentiated structures or elements derived from only two germinal layers. The term ‘teratomatous cyst’ has been debated in the literature.

When resecting tumours at the level of the cauda equina, different surgical options exist. We used a laminotomoplasty to remove the tumour with preservation of the posterior anatomical structures. This procedure has the advantage of easy MRI follow-up postoperatively. It is necessary to obtain long-term follow-up, following symptoms, neurological change, and the potential for spinal deformity.
REFERENCES


