SPINAL MASS LESIONS

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SUMMARY

52 patients who underwent operations for their spinal mass lesions in Bakırköy Mental and Psychiatric Hospital II. Clinic of Neurological Surgery between 1990 and 1995 are reviewed retrospectively with respect to the incidence, anatomic location, histopathology, imaging techniques, age and sex distribution, type of the surgical procedure, physical findings and postoperative care. Primary and metastatic tumors of the spine were the most common pathologies. The rest consisted of pyogenic and tuberculosis abcesses and hydatid cysts. As a standart approach laminectomy and resection of the tumor was done. For infectious and tumoral lesions that had selectively involved the vertebral body, howewer, and anterior of the spine was preferred.

Key words : Spinal surgery, Spinal mass lesions.

CLINICAL MATERIAL AND METHOD

52 case of spinal tumors were operated upon in our clinic between 1990 and 1995. 24 of these patients were male and 28 female, the youngest being 7 and the oldest 68 years old. The most common site was the thoracic region (65.4%) and the next was the lumbar region (25%). In cervical region there was only 5 tumors (9.6%).

In our series spinal mass lesions are located 55.8 % extradural (ED), 30.8 % intradural-extramedullary (ID-EM), 13.4 % intramedullary (IM) . Most of ED mass lesions are caused by metastases (34.4 %).

Plain X-Rays revealed abnormal findings in only 18 patients(34.6%). Destruction of the vertebral body, interpedinculate widening and thinning of pedicles were the detected radiopathological findings.

In 12 patiens myelography was the diagnostic investigation. All of the patients had the myelographic appearance of a total or subtotal block of the contrast material.

Spinal CT was used in 12 patients. Although myelography is still the procedure of choice on account of the socio-economical problems of our patients, we performed a myelo-CT after myelography. In all 12 patients, the tumor itself as well as its anatomical relationship with the adjacent structures were well documented.

Bone scan was performed in the cases in whom lesions were thought to be of metastatic origin. Althought increased osteoblastic activity could be observed particulary in cases with vertebral destruction, no single case of multiple involvement was detected.

The operative approach was a standart posterior laminectomy in 47 patients. 4 patiens (T8 vertebral hemangioma, T9 seconder amiloidosis and two cases of dorsal Pott abcesses) were operated on by a transthoracic approach. 1 patient who had a T1 eosinofilic granuloma,

was operated by a standart anterior cervical approach. The patients with malignant neoplasms were referred to postoperative radiotherapy.

Computed Tomography (CT) and/or Magnetic Resonance Imaging (MRI) were the diagnostic procedures performed in other patients.

The histopathological diagnoses are summarised in Table I.

DISCUSSION

In patients, who are thought of having a spinal pathology, MRI with contrast medium is the diagnostic procedure of choice. MRI demonstrates both the lesion and its relationship with adjecent structures excellently. Myelography should be performed, however, when diagnosis and treatment are delayed by the inability to perform MRI in timely fashion, when patients are unable to undergo MRI (because of pacemakers or claustrophobia, for example), or when a technically adequate MRI cannot be obtained (16,29,30,31).

Contrast-enhanced MRI is superior to unhanced studies in detecting leptomeningeal metastases and intramedullary tumors and may provide additional information on epidural disease (29,30,31). Although myelography has until recently been the procedure of choice for definitive imaging of the spinal canal to diagnose spinal mass lesions, MRI is reported to be equally sensitive in most cases (4,20, 31, 33).

45 % of spinal mass lesions are located ID (40% ID-EM , 5% IM). Meningioma, neurinoma and lipoma are the most common tumors in the ID-EM compartement (12).

Spinal meningiomas account for 22 % of primary spinal tumors. Spinal meningiomas often occur in women 40 to 70 years of age (24). Spinal meningiomas are most prevalent in the thoracic region, followed in frequency by the cervical region (19,24, 26,27).

Of our meningioma cases 85.8 % were thoracic and 14.2 % cervical. One of our patient had multiple spinal meningiomas (7.1 %) and

1 patient had concurrent spinal and cranial meningiomas (7.1 %). None of the intradural tumors had an extradural component. Complete tumor removal was achieved in 13 patients. In one patient only subtotal removal could be performed because the tumor was very adherent to the spinal cord. No postoperative complication was observed.

The Schwannoma is a benign expansile tumor of Schwann cells in a fibromixomatous matrix.The lesion is confined by the perineurium (9). Schwannomas arising from nerve roots are the most common type of intraspinal tumors and are generally recognized because of the development of neurological dysfunction. Any spinal level may be affected and most tumors are intradural; combined extradural and intradural forms occur in the cervical region, and thoracic schwannomas are sometimes wholly extradural. Arising in relation to a nerve root they form either a lozenge shaped intraspinal mass or a dumbell tumor

growing through an intervertebral foramen, partly intra - and partly extraspinal (18). In our series there are 3 Schwannomas (5.7%). All Schwannomas were intradurally-extramedullary.

According to their locations, spinal mass lesions are classified in 3 groups: Extradural (ED), intradural extramedullary (ID-EM), and intramedullary (IM). Extradural spinal mass lesions arise in vertebral bodies or epidural tissues. Most of ED spinal mass lesions are metastases. Spinal epidural metastases occur in 10 % of all cancer patients (12). The most common source of metastases is the lung. Other sources of metastases are breast, gastrointestinal system, prostate, melanoma and lymphoma (7,11, 12). Metastatic tumors are frequently located anteriorly or anterolaterally of the spinal canal (11).

70 % of spinal ED metastases are located in the thoraccic region, 20 % in the lumbar region and 10 % in the cervical region (11,25). In our series these rates are 67.4 % thoracic , 19.2 % lumbar , 11.5 % cervical

and 1.9 % sacral and all patients with metastatic tumors were extraduraly. The principle of relieving the spinal cord from the effect of metastatic epidural compression rather than just enlarging the spinal canal by laminectomy has shown promise (4,5,25).

Ependymoma of the spinal cord has a long,relatively benign natural history (32). 75% of ependimomas were located at the conus, filum terminale and lower spinal cord . Complete resection is possible ,and recurrences are rare after total excision. When the tumor has not been totally excised, radiotherapy can prevent recurrences. Most authors recommend total surgical excision , if possible; there are others whose approach is biopsy only, followed by radiotherapy (32). In our series there are 4 Ependymomas (7.6%), 3 of them beeing thoracal and one cervical. Complete tumor removal was achieved in 1 patient. Subtotal tumor removal could be performed in 3 patient and patients were referred to postoperative radiotherapy. These findings are in accordance with classic literature (12).

Astrocytomas are tumors within the cord itself in 80% cases. The whole cord is swollen, and the bony spinal canal is expanded with narrowing of the pedicles over several segments.Astrocytomas are the only common intramedullary tumor. Most of the other 20% of Astrocytomas occur in the lumbosacral canal, arising from the the filum terminale below the end of the cord. In our series there are 3 Astrocytomas (5.7%) in which located thoracal and lumbar regions (13). Subtotal tumor removal could be performed in all patients.One of patient was reoperated.

Spinal tuberculosis is still an occasional cause of cord compression. Initialy infection is an osteomyelitis affecting two or more adjacent vertebral bodies and destroying the intervening disc. Collaps and kyphosis develop, and a paravertebral abscess collect on one or both sides.Cord compression early in the illness is usually due to the abscess, but when occuring late in the healing or quiescent phase is due to bone

deformity(22). For Pott abcess anterior approach + radical excision + fusion is advocated by the WHO-Working Group on Tuberculosis. In our 2 patients with high thorassic Tb-abcess vertebrectomy + drainage of the abcess and fusion with autogenous iliac graft was performed by a transthorassic approach. These patients experienced a rapid improvement postoperatively and they were discharged with antituberculosis medication. The corsets were taken out at the third postoperative month and the patients were neurologically intact. The standard treatment for Tb is the combination of INH + ETM for 18 - 24 months(3). WHO-Working Group on Tuberculosis and The Madras Group claime that INH + RMP for 6-9 months is sufficient (8, 21). In our series there are four Pott abcesses.

Epidural spinal abscess causes rapidly developing paraplegia. Following a distant infection, usually a Staphylococcal skin lesion such as

a boil, epidural pus accumulates with or without vertebral osteomyelitis. Bone changes can seldom be detected on X Ray unless there is ascotiated osteomyelitis. Cord function is thereatened by compression and urgent laminectomy is required;as much pus as possible is removed, but the dura is not opened. Maximal doses of systemic antibiotics are given on the presumption that the organims are Staphylococci, pending a bacteriological report. Provided surgery is expeditious the outlook is good (3). In our series there is one extradurally spinal abcess and the patient improved rapidly postoperatively.

Lipomas are also probably dermoids of a kind, because fat is not normally found within the theca;these are usually combined intramedullary and extramedullary tumors by the time they come to operation ,and it is hard to determine in which situation the growth began. They are usually intraduraly-extramedullary, cervicothoracic region is the most common location (1). In our series there are three lipomas.

A patient (%1,9) had a Ewing sarcoma in a thoracic location. The lesion is subtotally extirpated and sent to radiotheraphy. The patient could not be followed up.

For a patient (1,9%), who had an eosinofilic granuloma at T1, vertebrectomy + fusion with an anterior approach was performed. No progression was observed in a one-year period.

Cordoma, osteoid osteoma, osteoblastoma, vertebral haemangioma can be the cause of extradural mass leisons (28). Vertebral hemangiomas are benign lesions of the spine with an estimated incidence of 9-12 %. One third of cases have up to 5 levels involved, often contiguous. The lumbar and lower thoracic spine are the most common locations, cervical lesions are rare. Occasional cases of purely extradural lesions have been described, intramedullary lesions are even less common. Malign degeneration has never been reported (10, 15). In our

series there is one vertebral hemangioma.

Hydatid cyst are found in bone in 0.5% to 2% of all cases of hydatidosis. The bones most often involved are the vertebrae, the long bones of the limbs (38%), the ilium (16%), the skull (4%), the ribs (3%), the scapula (1.5%) and the sternum (0.8%). Location of the parasite in bone is always primary. The parasite grows in the direction of least resistance, infiltrating and damaging the bone like a tumor. It may lead to spontaneous fracture. A radical surgical procedure is the preferred therapy. Hydatid cysts are therefore one case of spinal cord compression (2, 23).

Some authors had good results with 50 mg/kg Mebendazole in spinal hydatid cyst patients (6, 17). We did not observe any remission in our patients with Mebendazole.

Recently approaches to the spinal pathologies has been changing. There is a trend to directly approach to the lesion rather than to perform a decompressive laminectomy (14, 28, 31).

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Table I.

	Cervical	Thoracic	Lumbosacral	Total	Percent
Metastases	2	10	7	19	36.5
Meningioma	1	8	-	9	17.3
Ependymoma	1	3	-	4	7.7
Astrocytoma	-	2	1	3	5.8
Schwannoma	-	1	2	3	5.8
Lipoma	1	2	-	3	5.8
Pott abcess	-	2	2	4	7.7
Pyogenic abcess	-	-	1	1	1.9
Hydatid cyst	-	1	-	1	1.9
Ewing SA	-	1	-	1	1.9
Eosinophilic granuloma	-	1	-	1	1.9
Hemangioma	-	1	-	1	1.9
Amyloidosis	-	1	-	1	1.9
Plasmacytoma	-	1	-	1	1.9
TOTAL	5	34	13	52	