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Unusual Cause of Severe Knee Pain

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ABSTRACT

MRI is the preferred modality to investigate seizure as diagnostic yield is higher and more specific due to its varied applications. Total of 160 brain MR images of patients suffering from seizure during one year period was evaluated. All seizure cases underwent specific protocol for imaging that targeted hippocampal/mesial temporal lobe imaging.

INTRODUCTION

Meningiomas are tumors originating from the mening es.[1]Intraspinalmeningiomas are slow growing benign tumors that produce indolent neurological deficits.[2] Spinal meningiomas represent 25 to 46% of tumors of the spine.[3] Typically, they are located in the intraduralextramedullary space, grow slowly, and spread laterally in the subarachnoid space until they induce symptoms. They most frequently occur in the thoracic region in middle-aged women.[4]

The most patients present with pain, sensory loss, weakness, and sphincter disturbances.[5] However in our case she presented with severe knee pain not responding any non-steroidal anti-inflammatory drugs and showed slight improvement with low dose steroid.

CASE REPORT

A 30 years female patient was referred from department of orthopedic surgery to department of Medicine in Alka Hospital with the chief complaints of left knee pain for a period of three months. Pain was localized, worse at night and awakened her with a deep aching pain over the left knee. There was no history of swelling, numbness, limitation of movement, radiation of pain or trauma. She had no difficulty in walking or changes in bladder or bowel functions.

On examination, her general condition was fair, average built weighing 68kgs. Vitals were stable. There were no abnormalities in the chest, cardiovascular and abdominal examination. On local examination of lower limb, there were no obvious signs of inflammation or swelling. No pain on performance of flexion/extension or straight-leg raising was seen. All deep and superficial reflexes were normal. Motor and sensory examinations were unyielding.

The Chest x-ray, X-ray knee (AP and lateral view), complete blood count, liver function test, random blood sugar, C-reactive protein, Rheumatoid factor, anti-CCP antibodies, serum vitamin-D, urine routine microscopic examination, all were normal.

She was again referred back to orthopedic surgeon who advised for Magnetic Resonance Imaging (MRI) of knee which too was normal. Since all the laboratory reports were normal, it was very difficult to get into a definitive diagnosis of severe knee pain.

She was provisionally diagnosed as seronegative arthritis and was started on high dose steroid of methylprednisolone 32mg daily for two weeks, gradually tapered off, along with methotrexate 10mg/week. There was only slight improvement on her symptoms. She responded only to high dose steroids and pain recurred as steroids were tapered.

After three months of unrewarding treatment, again she came with pain over her thighs. Therefore, a MRI

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of lumbo-sacral spine was done (Figure 1). It revealed a well-definedintradural enhancing lesion suggestive of meningioma. She was referred to a neurosurgeon and was operated after twodays. A meningioma of 3x1.5cm was removed from the level of L_1-L_2 and was confirmed by histopathological examination and the pain subsided same night (Figure 2). Patient was mobile after few days of rest.

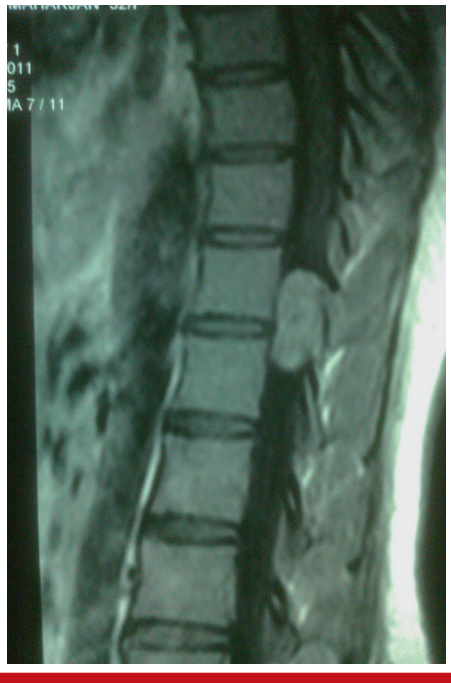

Figure 1. MRI of lumbo-sacral region showing tumor.

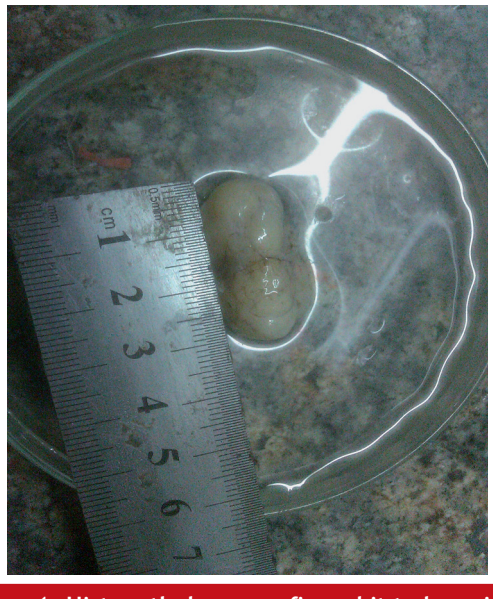

Figure 1. Histopathology: confirmed it to be spinal meningioma.

DISCUSSION

Meningiomas are tumors originating from the meninges.[1] Most meningiomas (90%) are categorized as benign tumors, with the remaining 10% being atypical or malignant.[2] They originate from meningothelial cells that occur in the greatest abundance in the arachnoid villi, correlating with their site of occurrence.[3]Most commonly found along the superior sagittal sinus (parasagittal) over the free convexity and falx, along the sphenoid wing, beneath the frontal lobes (olfactory groove and tuberculumsellae) within posterior fossa (cerebellopontine angle and foramen magnum) in the optic nerve and in the ventricles. They classically arise from a broad base along the dura, may invade bone, and derive their blood supply from the external carotid circulation.[4]

Spinal meningiomas occur less frequently than intracranial ones and account for approximately 7.5 to 12.7% of all meningiomas.[6]However, among spinal canal tumors, spinal meningioma is the second most common after nerve sheath tumors[3] 30% of intraduralextramedullary spinal tumors are meningiomas.

Epidemiological studies shows, the annual incidence of primary intraspinal neoplasm to be approximately five per million for females and three per million for males.[3]

Most commonly, it occurs in the 5th to 7th decades of life. It has striking female predominance, 5:1. It is more common in females due to possible dependence on sexhormones.[7]There is no ethnic or racial bias. The most frequent genetic mutations involved in meningiomas are inactivation mutations in the neurofibromatosis 2 gene on chromosome 22qfound on 60% of sporadic meningiomas. The most common location in female isthoracic (80%) followed by cervical (20%) then Lumbar and in male Thoracic is more thancervical thenlumbar.[8]

The symptoms of a meningioma are caused by the pressure the growing tumor exerts on surrounding tissue. These tumors can occur in a variety of places and therefore cause a wide range of symptoms.[3-5] Depending on the location of the mass, meningiomas may cause headaches, nausea, seizures, weakness or numbness in the limbs or face, visual problems, and gradual changes in mood or personality. The symptoms tend to increase in severity as the tumor grows in size. Sometimes memory loss, carelessness and unsteadiness are the only symptoms.[4]

Clinical classification of spinal meningiomas[5]

Grade I neurologically normal; mild focal deficit not significantlyaffecting function of involved limb; mild spasticityor reflex abnormality; normal gait

Grade II presence of sensorimotor deficit affecting function ofinvolved limb; mild to moderate gait difficulty; severepain or dysesthetic syndrome impairing patient's quality of life; still functions and ambulates independently

Grade III more severe neurological deficit; requires cane/brace forambulation or significant bilateral upper extremity impairment;may or may not function independently

Grade IV deficit; requires wheelchair or cane/brace w/ bilateralupper extremity impairment; usually not independent

Histologically, the cells are relatively uniform, with a tendency to encircle one another, forming whorls and psammoma bodies (laminated calcific concretions). They have a tendency to calcify and are highly vascularized.[6]

The world health organization has given following classification;[9]

Grade I Meningothelial, fibroblastic, transitional, angiomatous, microcystic, secretory, lymphoplasmacytic, metaplastic, psammomatous; does not fulfill criteria for grade II or III.

Grade II (Atypical) Choroid, clear cell; 4 or more mitotic cells per 10 HPF and/or 3 or more of the following: increased cellularity, small cells, necrosis, prominent nucleoli, sheeting, and/or brain invasion in an otherwise grade I tumor.

Grade III (Anaplastic) Papillary, rhabdoid; 20 or more mitoses per 10 HPF and/or obviously malignant cytologic characteristics such that tumor cell resembles carcinoma, sarcoma, or melanoma.

In a recent retrospective review of atypical and anaplastic meningioma cases, it was found that the mean overall survival for atypical meningiomas was 11.9 years vs. 3.3 years for anaplastic meningiomas. Mean relapse free survival for atypical meningiomas was 11.5 years vs. 2.7 years for anaplastic meningiomas.[9]

Imaging studies are the key component in the diagnosis of meningiomas. X-rays of spine can be used to spot a meningioma whereas computed tomography (CT) and magnetic resonance imaging (MRI) scans are used to provide more detail about tumors size, location and effect on surrounding structures.

Magnetic resonance imaging is the best imaging technique for diagnosing spinal meningiomas and hence should be the choice of diagnosis. Prior to the advent of MRI, spinal meningiomas were often confused with multiple sclerosis, syringomyelia, pernicious anemia, and herniated disc.[4, 8]

Watchful observation with close imaging techniques and regular follow up can be done if meningiomas are small and asymptomatic rather than treating it surgically. In cases which need treatment, the first line treatment is usually surgery. Complete removal of the tumor results in a cure. Chemotherapy has yet to show benefits. The probability of tumor recurrence or growth after surgical resection can be estimated by the tumor's WHO Grade and by the extent of surgery by the Simpson Criteria.[10]

The approach should allow wide enough exposure of the tumor and the dural attachment. The most frequent approach has been dorsal, by laminectomy at one level or by hemilaminectomy at one or two levels with lateral extension when necessary (anterior and anterolateral tumors).

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