Case Report

A Rare Extradural Mass: Primary Cervical Spinal Melanoma With Radiologic Findings

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Summary

Melanocytic cells are normally found in the meninges of the central nervous system (CNS). Primary tumour derived from meningeal melanocytic cells is rare. In this case report, a patient with primary spinal malignant melanoma localized in the cervical region was presented. Clinical features of this case including the magnetic resonance imaging (MRI) findings were described and its differential diagnosis was discussed with the line of literature.

Key words: Primary spinal melanoma, cervical, magnetic resonance imaging

INTRODUCTION

Primary melanoma of the CNS is rare, accounting for approximately 1% of all cases of melanoma. Most malignant melanoma lesions in the CNS are the result of metastases. Primary spinal malignant melanoma is extremely rare. Clinically, primary spinal melanoma shows a slower course and longer survival as compared with spinal metastasis from skin melanoma if early treated (2,4). In this case report, the MRI findings of a patient with primary cervical spinal melanoma was presented and its differential diagnosis was discussed with the line of literature.

CASE PRESENTATION

A 30-year-old woman with history of neck pain in the previous 6 months was admitted to our hospital. The pain worsened over time and five months later, she developed weakness, paresthesia in the left arm and leg accompanied with progressive gait disturbance. Physical examination revealed the left lower and upper extremity paresis, hemihypoesthesia, with hyper-reflexia and babinski sign in the left, impaired sensation of position and vibration in the left side and impaired cerebellar tests. Cervical MRI revealed a left anterolateral extramedullary mass at the C2-3 levels.
The mass extended dorsally and laterally, obstructing the spinal canal at C3 level. Although the spinal cord was compressed by the mass, prominent cord edema was not demonstrated on T2-weighted images. The mass was well demarcated, had high signal on T1-weighted images and low signal on T2-weighted images. On postcontrast images, it showed homogeneous enhancement and linear contrast enhancement of the adjacent dura (Figure 1). Computed tomography (CT) showed the presence of destruction at the C2 vertebral body, left peduncle and lamina. The left vertebral artery was obliterating by the mass (Figure 2).

On the basis of radiologic findings, a preoperative possible diagnosis of menengiom or metastasis was suspected. Brain, thoracic and lumbar MRIs were performed to detect another metastatic lesions. Addition thorax and whole body CT were examined. No pathological finding was detected. The operation was planned at cervical region for histopathological diagnosis. The patient underwent cervical laminectomy with partial resection of the lesion. Histopathological examination revealed a tumor organized in the interlacing bundles. Tumor cells had large nucleus, prominent nucleoli and eosinophilic cytoplasm which some of them had eosinophilic macronucleus. A large amount of brown pigment compatible with melanin were scattered throughout the background. Malign melanoma was diagnosed with characteristic findings of pathological examination (Figure 3). Firstly, whole body skin and anorectal region were examined to exclude metastatic melanoma for the diagnosis of primary melanoma. The cervical lesion was accepted as primary spinal melanoma with the light of all these findings. After surgery, the treatment including radiotherapy and chemotherapy was started. Three months later from the diagnosis, no changes were observed on MRI and there were no remarkable improvement in neurological deficits. Follow up, the patient refused to take treatment and died eleven months later from the initial diagnosis.

**Figure 1:** Sagittal T2-weighted image (a) shows extraaxial hypointense mass lesion. Sagittal T1-weighted image (b) shows hyperintense mass narrowing spinal canal and compressing the spinal cord. Sagittal postcontrast T1-weighted image (c) shows homogeneous enhancement and dural tail sign.
DISCUSSION

Melanocytes can be found in the skin, mucous membranes, leptomeninges, cerebral parenchyma, and uvea, reflecting the most common sites in which melanomas arise\(^4\). Primary spinal malignant melanoma is unusual, with the first case reported by Hirschberg in 1906, and it is a very rare condition: to date fewer 60 cases have been reported in the literature\(^6,10\). Intramedullary, leptomeningeal and dural origin of primary malignant melanoma were demonstrated. When primary CNS melanoma has a spinal localization, it arises more commonly in the thoracic segments\(^2\). The clinical presentation is non-specific and suggests progressive cord compression. The case described here is a case of primary melanoma arising from the cervical...
leptomeninges. Melanoma of the cervical spinal cord is especially rare, and only 13 cases have been reported in the literature(3,5,9,10).

Magnetic resonance imaging is the method of choice in the diagnosis of spinal tumors. This technique may be used to demonstrate the appearance of spinal malignant melanoma(4). The MRI signal of melanocytic tumors depends on the presence of melanin as well as acute or chronic intratumoral hemorrhages and fat deposits(6). In the typical melanotic melanoma, melanin has a paramagnetic effect that derives from the presence of stable organic radicals inside. The unpaired electrons of these free radicals interact with water protons, resulting in a shortening of both T1 and T2 relaxation times, and producing hyperintensity on T1-weighted images and hypointensity on T2-weighted images. Amelanotic melanoma and melanoma without hemorrhagic component appear isointense-hypointense on T1-weighted images and moderately hyperintense on T2-weighted images. It is difficult to distinguish melanoma from other tumor preoperatively such as meningioma or metastasis(7).

Spinal meningioma is rare and account about 1.2 % of all meningioma and 25 % of all spinal cord tumor. This tumor may have similar neuroradiologic findings and may mimic melanoma. The “dural tail sign”, or linear enhancement intensity of the adjacent dura after gadolinium administration, is strongly suggestive of meningioma and when present, may refine this diagnosis in relation to other tumor types(7). Bone changes occur in approximately 20-25 % of all types of meningioma, such as hyperostosis or destruction. Bone involvement, especially osteolysis, has been mentioned as a factor in helping to predict the malignancy of meningioma(10). In this case, the dural tail sign and bone destruction let us to think that the spinal lesion might be a meningioma. However the increased signal intensity on T1-weighted images was noncharacteristic findings for meningiomas. Vertebral bone destruction is the most common finding of metastatic lesions of spine. But the absence of a primary tumor made metastasis less likely.

It has been suggested that primary spinal melanoma exhibit slow progression and the tumor is less aggressive than the more common melanoma of the skin with metastasis to the CNS(4). The mean survival time with primary spinal malign melanoma is 6-7 years(6). However in this case, the patient died within 1 year after the diagnosis.

Given the low incidence and wide range of possible manifestations of primary spinal melanoma, there is no established treatment for this disease. Most authors agree that complete surgical excision whenever possible is the best treatment. The role and efficacy of radiotherapy and chemotherapy remain controversial(4).

In conclusion, this case is reported to underline the importance and difficulties concerning the preoperative diagnosis of primary cervical melanoma with unusual radiological features. Spinal melanoma should be considered in patient with extraaxial lesion with hyperintensity on T1-weighted images, hypointensity on T2-weighted images and dural tail sign after contrast enhancement.

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