Primary Spinal Cord Malignant Melanoma*

Case Report

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Primary malignant melanoma of the spinal cord is a rare tumor; only 32 cases have been reported. Of these, three had metastasis to extracranial organs. We are reporting a case in which a malignant melanoma, apparently originating in the spinal cord, metastasized to the brain, spinal cord, and liver.

Case Report

A 64-year-old white man was admitted with a complaint of progressive severe pain in the left shoulder, arm, and neck of 4 months' duration. The pains had begun following an automobile accident, and were aggravated by moving the shoulder or arm. A 2-week trial of cervical traction at the Presbyterian Medical Center followed by 3 weeks' use of a cervical collar brought no significant relief. The patient was readmitted in August, 1968, for definitive study in anticipation of surgical relief of the pain.

Examination. There were no abnormalities except for many skin nevi, all of which appeared benign. Neurological examination revealed pain on percussion over all of the cervical vertebrae, but otherwise was entirely normal.

Blood studies showed a hemoglobin of 15.7 gm%, a hematocrit of 50 vol%, and white blood count of 8,950 per cu mm with normal differential and platelets. The urine was loaded with white blood cells and on culture grew B. Proteus. Spinal fluid collected at an initial pressure of 160 mm water showed 9 lymphocytes per cu mm, a protein of 82 mg%, sugar 68 mg%, colloidal gold 0001100000, and a negative test for syphilis. Cervical spine x-rays disclosed degenerative arthritic changes with joint space narrowing and arthritic lipping at the fifth and sixth cervical intervertebral spaces. A cervical myelogram demonstrated a predominantly left-sided oval filling defect 2 cm in diameter opposite the body of the fourth cervical vertebra (Fig. 1 left). Chest and skull films were negative.

Operation. A complete laminectomy of C-3 through C-5 was performed on September 1, 1964. A brown nodular 1.5 cm tumor was found in the subdural space along the left posterolateral aspect of the cord at C-4 (Fig. 1 right). It was adherent to the side of the spinal cord in the region of the dentate ligament but did not appear to extend into the medullary portion. A gross total removal of the tumor was accomplished; one small dorsal nerve root was necessarily sacrificed.

Histopathological study identified the tumor as a malignant, pigmented, extramedullary melanoma. The slide was reviewed by H. M. Zimmerman, M.D., pathologist at Montefiore Hospital, New York, who concurred in the diagnosis.

Postoperative Course. For about 18 months the patient showed no signs of recurrence. He then began to have leg weakness, bilateral orbital headaches, blurred vision, loss of accommodation, intermittent confusion, and memory deficits. Physical examination during a brief hospital admission disclosed an intention tremor in the right arm. One month later he was readmitted semicomatose although still responding to pain and verbal stimuli. Babinski and Hoffman responses were present on the right. There were anisocoria and left-sided ptosis. A brain scan was negative. The patient developed pneumonia, and died approximately 24 months after the laminectomy and removal of the tumor.

Autopsy. Multiple black discrete tumor metastases, the largest 2.0 cm, were found in both frontal and parietal lobes, the cerebellum, and the meninges of the spinal cord at all levels (Fig. 2). Diffuse meningeal exten-
sion was seen principally at the base of the cerebrum but also along the spinal cord meninges. There was no tumor at the site of surgery. A 4-cm necrotic metastasis had partially replaced the pituitary, extending inferiorly to lie freely on the circle of Willis. Four small white to tannish tumor metastases were present in the liver. The multiple skin nevi showed no ulceration or atypical pigmentation. Both pulmonary arteries were partially occluded by thromboemboli; there was a recent infarct of the right lower lobe of the lung, and a healed myocardial infarct of the left ventricle.

Microscopically, the metastases were malignant melanoma, very similar to the tumor resected at surgery. The cells were large, round, oval, and spindle-shaped, with large amounts of intracellular melanin pigment (Fig. 3). The nuclei were hyperchromatic, anaplastic, and an occasional mitosis was seen.

**Discussion**

Virchow\(^1\) was the first to report primary malignant melanoma of the central nervous system; since then over 68 cases have been published.\(^4\)

Among the 26 cases of primary melanoma of the spinal cord received by Hirano and Carton,\(^5\) 10 were extramedullary and intradural and two were outside the nervous system. These findings were also characteristic of our case. These cases certainly indicate that primary central nervous system tumors can metastasize despite the opinion of some authorities.\(^13\) It can be argued that the primary central nervous system lesion could actually be a metastasis from an occult primary site in the skin, retina, esophagus, rectum, or other site. Metastatic melanoma in lymph nodes arising from skin sites that

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**Fig. 1.** *Left:* Myelogram. Tumor outlined at C-4. *Right:* Exposure of the malignant melanoma before removal. Clamp is holding dura.

**Fig. 2.** Cerebellum removed at autopsy. Note meningeal spread on surface, also tumor filling 4th ventricle.