Ependymoma of the Cauda Equina with Distant Metastasis

Case Report

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Tumors of the central nervous system that metastasize outside the confines of the craniospinal axis have been of much interest because of their rarity. About 90 such instances have been recorded, but most have been exclusively intracranial in origin. We are reporting a case of ependymoma of the spinal cord with distant metastases.

Case Report

A 56-year-old unmarried white woman was admitted to the Archbold Memorial Hospital from October 24 through December 13, 1960, because of numb toes and feet that hadn’t “worked right” for 7½ months, plus difficulty with balance and pain in both legs of 3 months’ duration. The level of numbness and pain had recently increased to that of “saddle anesthesia.”

On October 6, 1960, she had had an exploration of the lower spine in a Florida hospital with biopsy of a tumor found to be ependymoma (Grade 4) involving the lumbar spine from approximately T-11 to S-1 (Fig. 1). X-rays at that time showed evidence of a spinal fluid block at C5-6. X-ray therapy had been advised rather than further surgery; this was started in Florida and completed at Archbold Memorial Hospital.

First Examination. There was marked weight loss, some expiratory wheezes in the left anterior superior area of the chest, anesthesia of the right lumbar region, perineum, and inner aspect of the leg, and some hypesthesia in the right index finger. Because of increased difficulty in voiding, the patient had a vesical resection with improvement.


Her final admission was on April 30, 1961, when she had very labored breathing with moist rales bilaterally. There was now almost complete anesthesia of the lower half of the body and some hypesthesia in the distribution of the right median nerve. Chest X-ray revealed extensive infiltration and cavitation in the left upper lobe of the lung. In spite of supportive treatment, the patient showed no improvement and died on May 4.

Autopsy. The following gross pathological findings were noted: a cavity measuring approximately 6 cm in diameter in the posterior lateral aspect of the left upper lobe of the lung; 1½ cm nodule in the left lower lobe; a yellowish, circumscribed, partially necrotic, 6 X 2 cm tumor in the left cerebral hemisphere; and circumscribed tumor deep in the right parietal lobe. The brain was edematous. There was thickening and adhesions of the dura in the mid-dorsal region, and considerable fibrosis in the lower portion of

FIG. 1. High-powered photomicrograph of a section of the ependymoma (grade 4) of the lumbar spine (October 6, 1960). H. & E., ×430.
the cord. The surface of the cord from T-5 downward was brownish and gelatinous.

Microscopic Examination. The upper thoracic segment of the cord was not remarkable. In the mid-thoracic area there was thickening of the meninges due to tumor infiltration, and the structures of the cord were distorted. There was direct invasion of the spinal cord by tumor, and in some areas there was a perivascular distribution of tumor, extending into the cord. Between the middle and lower segments of the cord a few tumor cells were found in small clusters in the meninges; scattered pigment-laden macrophages were present. There was partial demyelination of some of the tracts. Microscopic examination confirmed the presence of neoplasm in the brain.

The tumor, whether in the spinal cord, brain, or lung, had essentially the same characteristics. The large vivid nuclei showed variation in size and hyperchromatism; there were often prominent nucleoli (Fig. 2). Mitotic figures were present in considerable numbers. The cytoplasm varied from scant to moderate. The cells were arranged in cords and sheets and often appeared in several layered columns separated by clefts and sometimes in irregular papillary processes. The supporting stroma was very scant.

Necrosis was a prominent feature in all sites, but was most notable in the large cerebral metastases.

Discussion

There have been two reports of ependymomas of the cauda equina with distant metastases outside the nervous system. Weiss reported the case of a 32-year-old white man with an ependymoma of the cauda equina who died 10 years after the onset of symptoms, with extension to vertebrae, spinal musculature, pelvis, iliac veins, and inferior vena cava, and distant metastases to liver, lungs, hilar lymph nodes, mediastinal soft tissue, and chest wall. Patterson, et al., reported the case of a 42-year-old woman with an ependymoma of the cauda equina, who died 17 years after the onset of her illness with extension to vertebrae and retroperitoneal structures and metastases to liver, lungs, plural cavities, and para-aortic and hilar lymph nodes. Kernohan reported an additional case of ependymoma of the cauda equina, which extended outside the craniospinal axis to the striated muscles of the back but showed no distant metastases.

It is not clear why so few gliomas metastasize outside the nervous system. Fragoyannis and Yalcin offer an interesting discussion of this topic in their review of metastasizing gliomas.