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*AJNR Am J Neuroradiol* 1991, 12 (3) 564-565

<http://www.ajnr.org/content/12/3/564.citation>

This information is current as  
of May 13, 2024.

## Foramen Magnum Choroid Plexus Papilloma with Drop Metastases to the Lumbar Spine

We report the MR findings in an unusual case of a primary foramen magnum choroid plexus papilloma with drop metastases to the lumbar spine.

### Case Report

A 35-year-old woman had had episodes of right-sided facial twitching for approximately 2 months. For 2–3 weeks before admission, she had had tightness in the left buttock radiating down to the lateral calf and numbness in the perineal region. The results of physical examination were normal except for decreased sensation in the right side of the perineum and decreased reflex of the left knee. MR imaging (Figs. 1A–1C) (1.5 T) showed an extraaxial mass at the left lateral aspect of the foramen magnum, which was compressing the inferior pons and lateral medulla, involving the seventh, ninth, 10th, and 11th cranial nerves. The tumor was isointense with brain tissue on a short TR/TE spin-echo sequence (800/20/2), was mildly hyperintense on a T2-weighted spin-echo sequence (2450/80/1), and showed homogeneous enhancement on the short TR/TE sequence after injection of gadopentetate dimeglumine. A subsequent MR study and CT myelogram of the lumbar spine showed small lesions in the lower subarachnoid space, posterior to the L3 and L4 vertebral bodies, consistent with multiple drop metastases (Fig. 1D).

At surgery, a reddish, well-circumscribed tumor (3.6 × 0.9 × 0.8 cm) was found in the region of the foramen magnum, compressing the brainstem and extending down into the upper cervical spinal canal and up into the inferior part of the cerebellopontine angle. The mass was not removed entirely because of cranial nerve involvement (VII, IX–XI). Histologic examination showed a neoplasm with well-differ-

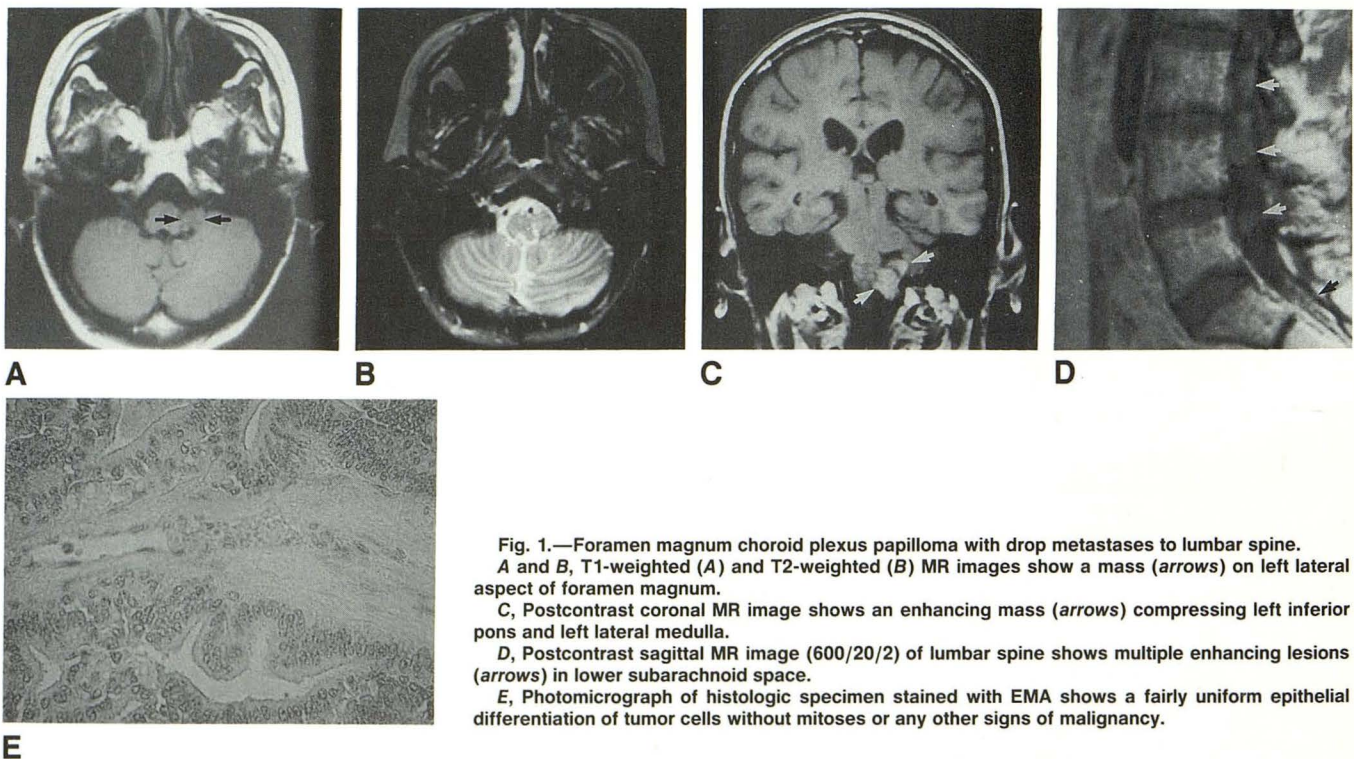
entiated papillary components, presenting innumerable microvilli and a few cilia on the apical surface of the cells. The final diagnosis was consistent with choroidal plexus papilloma (Fig. 1E).

### Discussion

Choroid plexus papillomas are rare tumors of the CNS. They account for approximately 3.0% of all intracranial neoplasms in children and 0.5% of tumors in adults [1]. Most choroid plexus neoplasms arise from the epithelial cells inside the cerebral ventricles. The occurrence of extraventricular growth is found in three situations [2]: direct extension of a primary intraventricular papilloma, seeding along CSF pathways (drop metastases), and development of a primary tumor from the small choroid tuft that normally projects outside the foramen of Luschka.

According to Rovit et al. [1], 43% of choroid plexus papillomas occur in one of the lateral ventricles, 39% in the fourth ventricle, 10% in the third ventricle, and 9% in the cerebellopontine angle. The most common site for these tumors in adults is the fourth ventricle; in children, the most frequent site is the lateral ventricle, with a preference for the trigone on the left side [3, 4]. The rarity of a primary papilloma originating in the foramen magnum is attested to by the small number of cases reported in the world's literature since the original description by Cushing in 1917 [5].

Complications such as seeding of benign papillomas within the subarachnoid space can occur, and secondary implants (drop metastases) often are detected far away from the original tumor [1, 2]. Hydrocephalus may develop because of the excessive production of CSF by the tumor [6], arachnoid granulation blockage by intermittent



**Fig. 1.**—Foramen magnum choroid plexus papilloma with drop metastases to lumbar spine. **A** and **B**, T1-weighted (**A**) and T2-weighted (**B**) MR images show a mass (arrows) on left lateral aspect of foramen magnum. **C**, Postcontrast coronal MR image shows an enhancing mass (arrows) compressing left inferior pons and left lateral medulla. **D**, Postcontrast sagittal MR image (600/20/2) of lumbar spine shows multiple enhancing lesions (arrows) in lower subarachnoid space. **E**, Photomicrograph of histologic specimen stained with EMA shows a fairly uniform epithelial differentiation of tumor cells without mitoses or any other signs of malignancy.

hemorrhage [3], or mechanical obstruction to the passage of fluid. Glomus displacement, surrounding edema, parenchymal invasion, and invasion of surrounding structures in general are findings that suggest degeneration to choroid plexus carcinoma [7]. Although papillomas are considered histologically benign, recurrence of tumor postoperatively has been noted [1, 8].

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Note.—Dr. Domingues was supported by the Federal University of Rio de Janeiro, and Dr. Reimer was supported by the Deutsche Forschungsgemeinschaft (RE 758/1-2).

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