Case report


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Computerized tomography (CT) revealed obstructive hydrocephalus and a pineal mass in a 14-year-old girl who presented with headaches and a Parinaud's syndrome. Although there was no major evidence of extracranial tuberculosis, and cerebrospinal fluid obtained during third ventriculostomy contained no leukocytes, suboccipital transtentorial biopsy of the lesion revealed it to be a tuberculoma. Serial CT scans showed resolution of the lesion following subtotal resection and antituberculous therapy. The implications of this case with regard to difficulties in the diagnosis of cerebral tuberculoma and the management of pineal region tumors are discussed.

KEY WORDS • pinealoma • tuberculoma • hydrocephalus • pineal tumor

Tuberculoma mimicking a pinealoma

Case Report

This 14-year-old Melanesian girl was admitted on December 14, 1981, for investigation of headache, nausea, intermittent vomiting, and diplopia. Until 2 weeks prior to admission she had lived in New Caledonia, where she had enjoyed good health, although a sister had died from TB 9 months previously. During a 1-week hospitalization in Noumea, the patient was observed to experience three episodes of opisthotonic-type posturing with brief loss of consciousness, followed by spontaneous recovery.

Examination. On admission the patient was afebrile with normal vital signs. She was irritable, expressing a desire to return home in both the French and English languages. Funduscopia was unremarkable. There was paralysis of upward gaze with failure of convergence and of the accommodation reflex. The light reflex was preserved, and there was no anisocoria. There was mild neck stiffness. Muscle tone was normal and the plantar reflexes were flexor. The remainder of the neurological and systemic examinations were normal, apart from slightly enlarged right axillary lymph nodes. Although she was thin, and menarche had not occurred, there was moderate breast development and growth of pubic hair. There was no evidence of a dietary deficiency.

Various hematological, biochemical, and bacteriological tests revealed the following results. Hemoglobin was 14 gm/dl; white cell count 12,500 cells cu/mm with 75% polymorphonuclear cells; platelet count 495,000/cu mm; erythrocyte sedimentation rate (ESR) 19/hr; serum gamma globulin 18.4 gm/liter (normal 6.1 to 17.4 gm/liter) with immunoglobulin (Ig)M 581 mg/dl (normal 60 to 200 mg/dl) and IgG 1714 mg/dl (normal 740 to 1400 mg/dl). Tests of serum human chorionic gonadotropin (β-HCG), alphafetoprotein

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FIG. 1. Initial axial and coronal computerized tomography scans of the patient. A and B: Scans made on December 14, 1981, before (A) and after (B) contrast administration, demonstrating symmetrical hydrocephalus and a circumscribed pineal region lesion. The center of the lesion does not enhance as strongly as the periphery following contrast administration (B). C: Coronal scan performed on December 24, 1981, following the third ventriculostomy, demonstrating the differential enhancement more effectively.

(aFP) and carcinoembryonic antigen were within normal limits. Gonadotropin, prolactin, and thyroid-stimulating hormone release in response to luteinizing-releasing factor were normal. A Mantoux test was equivocal because of the proximity of a phlebitic intravenous cannulation site.

Chest roentgenograms with lordotic views were normal. Computerized tomography (CT) revealed obstructive hydrocephalus and an enhancing pineal mass (Fig. 1 left and center). Coronal CT performed 9 days later confirmed a pineal region mass; however, the pattern of contrast enhancement was confined to the periphery of the lesion (Fig. 1 right). Carotid and vertebral angiography did not reveal any neovascularity or distortion of the local venous anatomy. In view of the past exposure to TB, the lymphadenopathy, and hypergammaglobulinemia, rifampin (500 mg/day), isoniazid (300 mg/day), and pyridoxine (25 mg/day) were commenced the day after admission. A third ventriculostomy was performed through a right frontal craniotomy 2 days later. Ventricular cerebrospinal fluid (CSF) aspirated during this procedure revealed no white blood cells, 12 red blood cells, and a protein level of 0.58 mg/dl (normal 0.15 to 0.45 mg/dl). In view of the absence of lymphocytes in the CSF, the lesion was considered to be a pineal tumor, and antituberculous therapy was ceased. Following the ventriculostomy, there was rapid resolution of the Parinaud’s syndrome and the patient’s behavior returned to normal. Axial CT scans confirmed resolution of the hydrocephalus (Fig. 2 left).

Operation. The pineal lesion was approached through a right occipital craniotomy on December 29, 1981. The occipital lobe was elevated and the tentorium divided 1 cm lateral to the falcial attachment. The arachnoid surrounding the great vein of Galen and the quadrigeminal cistern was found to be thickened and fibrotic. Dissection through this arachnoid revealed a circumscribed encapsulated yellowish mass. The capsule, which consisted of gliotic granulation tissue, was incised and the lesion biopsied. The lesion was avascular and consisted of cheesy caseous material, which frozen section confirmed to be a tuberculoma granuloma. The lesion was gutted, but the capsule was left undisturbed.
Tuberculoma mimicking a pinealoma

Pathological Examination. Histological examination of the specimen revealed classical caseating tuberculous granulomas with giant cells (Fig. 3). Ziehl-Neelsen stain showed one tubercle bacillus in one of the granulomas. There was no pineal parenchyma in the resected tissues. Culture of samples of the specimen grew Mycobacterium tuberculosis, sensitive to multiple antibiotics tested.

Postoperative Course. The patient's clinical progress postoperatively was marked by a dramatic increase in both height and weight over the 4 months of hospitalization. Antituberculose therapy was recommenced in the immediate postoperative period (rifampin 500 mg/day, ethambutol 450 mg/day, isoniazid 300 mg/day, and pyridoxine 25 mg/day). The ethambutol was later omitted when the sensitivities of the organism became known. Serial CT studies (Fig. 2) showed progressive resolution of the lesion. Serial CSF examination also confirmed the efficacy of the treatment: the CSF white cell count fell sequentially from 77 cells/cu mm on January 28, 1982, to 44 cells/cu mm on February 26, and finally to 17 cells/cu mm on March 26. She was discharged back to Noumea 4 months after admission, where the antituberculose treatment was continued.

Discussion

Mayers and associates have recently described the difficulties in diagnosis of cerebral tuberculoma in areas where the disease is not endemic, and where there may be no history of previous tuberculosis or known exposure to the Mycobacterium bacilli. Clinical examination may reveal no evidence of extracranial TB in 42% to 60% of cases, fever may be absent, and chest roentgenography, ESR, and testing with purified protein derivative may be normal. Furthermore, CT is not diagnostic, and confusion with gliomas, meningiomas, or metastatic neoplasia may occur. Thus, although a trial course of triple antituberculose therapy with CT monitoring of the lesion size has been recommended to obviate craniotomy, many of these lesions require biopsy to reveal their pathology.

This case demonstrates well the difficulties in the diagnosis of the solitary tuberculoma. The diagnostic confusion in this case was compounded by the absence of lymphocytes in the CSF aspirated at the time of third ventriculostomy. It is possible that the 2 days of rifampin and isoniazid therapy prior to sampling may have been sufficient to cause this result, since acellular CSF was reported following a 5-day course of streptomycin in a case of cerebral tuberculoma thought initially to be a bacterial brain abscess. The diagnostic confusion in our case was further complicated by the similarity of the lesion both clinically and neuroradiologically to a pinealoma. Tuberculomas have been reported as mimicking gliomas, meningiomas, and even a cerebellebropontine angle tumor, but this is the first report of a solitary tuberculoma masquerading as a pineal region tumor.
The differential diagnosis suggested by the axial CT scan in this patient included a low-grade astrocytoma, pineocytoma, pineoblastoma, or pineal germ-cell tumor, since all these lesions may be circumscribed, isodense with brain, and enhance fairly homogeneously on administration of contrast material. Although the coronal CT demonstrated much more effectively the peripheral contrast enhancement of the lesion, it was not diagnostic. Testing for tumor markers (βHCG and αFP) also did not clarify the diagnosis, since these polypeptides, although secreted by endodermal sinus tumors, embryonal carcinomas, and choriocarcinomas, are not produced by either pineal parenchymal tumors or germinomas, which comprise the greater proportion of pineal region neoplasms.

The management of pineal region tumors remains controversial, with advocates of both conservative and aggressive surgical treatment. We favor biopsy with subsequent therapy based upon histological diagnosis because of the biological heterogeneity of pineal region neoplasms. Although the case reported here is unique, it perhaps demonstrates the possible problems that could occur following irradiation of a pineal region tumor without tissue diagnosis.

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References


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