Surgical treatment of a mesencephalic tuberculoma

Case report

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A case is reported of a mesencephalic tuberculoma which was suspected clinically and removed surgically with a relatively good functional recovery.

KEY WORDS • brain-stem tuberculoma • surgical removal

Tumors of the mesencephalic region are usually regarded as inoperable because of their location and their frequently infiltrating character. Rewarding results have occasionally been described when cystic formations or hematomas of this region have been evacuated. Surgical exploration of brain-stem tumors has been proposed by some authors. We are reporting the total excision of a benign, non-cystic, expansive tuberculoma of the mesencephalon.

Case Report

This 23-year-old woman was admitted to the Neurosurgical Service of the National Hospital Marqués de Valdecilla in October, 1976. About 7 months before her admission and 2 weeks after the delivery of a baby, she had noted an increasing diplopia and after a few days a complete paresis of the third cranial nerve on the right side. Some weeks later she was aware of progressively increasing weakness of the left limbs. She was admitted to a neurosurgical service at another hospital, and underwent computerized tomography (CT). The CT study showed a well defined mesencephalic tumor surrounded by edema; there was also moderate dilatation of the lateral ventricles. The patient was treated with a ventriculo-atrial shunt and given radiation therapy (3500 rads). The patient's condition deteriorated progressively over several months. She developed a complete hemiplegia on the left side and a ptosis of the left eye. During the 2 weeks before her admission she became increasingly drowsy.

Examination. The patient was lethargic. She had a bilateral palsy of the third cranial nerve, left hemiplegia with marked spasticity, exaggerated tendon reflexes, and a Babinski sign. The right plantar reflex was abolished.

Routine laboratory tests and skull films were normal. Cerebrospinal fluid obtained by lumbar puncture showed a normal resting opening pressure and normal cell, glucose, and protein content. Electroencephalography (EEG) showed poorly organized alpha activity with paroxysmal high voltage delta activity from both hemispheres. A slight upward and posterior shift of the upper portions of the aqueduct could be seen in the...
pneumoencephalogram. The left retrograde brachial arteriogram showed a stretching and forward displacement of the thalamic perforating arteries. An old parenchymatous lesion of dubious nature was found in the left lung.

Immediate treatment with prednisone (40 mg daily) led to a considerable improvement over the next 3 weeks. The patient became fully conscious and cooperative. The left third cranial nerve palsy disappeared, and the left limbs gradually recovered motility, although intentional tremor appeared in the left arm. After this initial improvement, the patient relapsed to her previous condition, even though the steroid therapy was continued and increased.

Operation. A right temporo-occipital craniotomy was performed and the tentorium was incised. The mesencephalon was widened, although its surface appeared normal. A fine needle was inserted about 5 mm below the posterior cerebral artery and dorsal to the lateral sulcus of the mesencephalon. At a depth of about 3 mm an elastic resistance was encountered. The mesencephalon was incised longitudinally dorsal to the lateral sulcus.

A well delineated tumor was found at a depth of about 4 mm. The tumor was carefully dissected and removed by slight intermittent tractions along the longitudinal axis of the mesencephalon. There were no autonomic changes during the removal of the tumor. The tumor cavity was covered by a thin reddish membrane and the bleeding was easily controlled.

Pathological Examination. The macroscopic appearance of the granuloma was that of a grayish nodule of irregular surface, $2.5 \times 1.7 \times 0.7$ cm in size (Fig. 1). The nodule had a volume of 2 cc. Microscopic examination of the mass showed it to be a tuberculoma consisting of several areas of caseous necrosis surrounded by epitheloid cells and more peripherally by lymphocytes and plasmatic cells. Some giant polynuclear cells could be observed. The presence of numerous acid-fast bacilli could be demonstrated with specific stains.

Postoperative Course. During the first 24 hours the patient remained quite stuporous with tachycardia, hyperthermia, and unstable blood pressure. On the second day she obeyed simple orders, and on the fifth day she was fully conscious and psychologically normal. About the tenth postoperative day, voluntary movements of the left leg and elbow were possible. Motor recovery of the left limbs increased slowly and 2 months after surgery she was able to move the left arm and leg and to walk with some help. She could partially open and center her left eye, although there was still a palsy of the third cranial nerve. This palsy was complete on the right side. Some slight postural tremor was apparent in the left hand while the paresis was clearing. The EEG findings have remained unchanged.

Discussion

This patient had many of the features characteristic of malignant brain-stem tumors. The rapid and relentless progressive course, early ventricular dilatation as well as little or no effect of radiation therapy pointed to this diagnosis. The deficit remained after 7 months localized to the mesencephalon, and CT scanning showed a well delineated tumor surrounded by edema. These two features, together with the signs of an old pulmonary disease, and the age and sex of the patient suggested the possibility of a tuberculoma. These lesions are rare, and their location in

Fig. 1. Photograph of the tuberculoma.
the brain stem is not frequent (8% in the series of Asenjo, et al.), but tuberculoma of the peduncle is a classic finding.

The onset of the symptomatology after the delivery of a baby could be related to the adverse effect of pregnancy upon tuberculosis. According to Dastur and Desai, most of their female patients had at the time of admission either recently delivered or were pregnant. The initial favorable response to corticoid therapy could have been seen with either a tumor or a tuberculoma, and might be attributed to its action upon edema. The dangers of prolonged steroid administration in the presence of a suspected tuberculous disease cannot be overlooked, and therefore corticosteroids should be used with extreme caution or if possible avoided.

We incised the mesencephalon through the posterior-lateral zone because we hoped that the longitudinal surgical incision in this region would not lead to serious functional impairment. The early and satisfactory functional recovery in our patient, as well as the clearing of symptoms reported by others after evacuating cysts or hematomas from the brain stem, suggests that the structures of the brain stem have a greater resistance and capacity to recover than has been previously assumed. We believe that surgical exploration of suspected brain-stem tumors should always be considered. The use of CT scanning can be of great help in selecting the patients with cysts or well delineated nodules in which a surgical approach might be justified.

References

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