Unilateral Hydrocephalus: Atypical Presentation of Intracranial Tuberculoma

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INTRODUCTION

An intracranial tuberculoma results from hematogenous seeding of tubercle bacilli to the leptomeninges or brain parenchyma. Despite the wide accessibility of anti-tubercular drugs, it is still the most common infective granuloma of the central nervous system. The usual clinical presentations are those of a progressive space-occupying lesion showing signs of increased intracranial pressure with or without localized neurological signs, and progressive neurological disability without raised intracranial pressure (3). We describe the presentation and management of a single tuberculoma obstructing the foramen of Monro and causing unilateral hydrocephalus.

CASE REPORT

A 43-year-old right-handed male presented with history of low-grade fever and headache of 6-month duration. He also had a 7-day history of progressively changing behavior. There was no history of visual deterioration or neck stiffness. Examination revealed cognitive dysfunction in terms of aggressive behaviour and memory disturbances. Cranial CT and MRI (Figure 1A,B,C) revealed a markedly dilated right lateral ventricle with a midline shift to the left. Membranous occlusion of the right foramen of Monro (arrow) was seen. Septum pellucidum was intact and the third ventricle was normal in appearance. There were no masses or associated anomalies seen. E.S.R. was 40mm/ 1st hour. Other hematological and radiological investigations were grossly normal. Chronic ependymal inflammation was considered for this membranous occlusion of right foramen of Monro. An emergency neuro-endoscopic septostomy with fenestration of the occluded foramen was planned. A peelaway sheath (14.0 Fr.; Universal Gaab Sys.) was passed into the anterior horn of right lateral ventricle through a standard coronal burr hole. A rigid 4 mm diameter endoscope (Karl storz inc.) was then inserted into the right lateral ventricle through the peelaway sheath. Exploration of lateral ventricle revealed an isolated small rounded mass obstructing the right foramen of Monro (Figure 2A). The mass densely adhered to the fornix and choroid plexus. A biopsy taken from the mass (Figure 2B) was then inserted into the right lateral ventricle through the peelaway sheath. Exploration of lateral ventricle revealed an isolated small rounded mass obstructing the right foramen of Monro (Figure 2A). The mass densely adhered to the fornix and choroid plexus. A biopsy taken from the mass (Figure 2B) was then inserted into the right lateral ventricle through the peelaway sheath. Exploration of lateral ventricle revealed an isolated small rounded mass obstructing the right foramen of Monro (Figure 2A). The mass densely adhered to the fornix and choroid plexus. A biopsy taken from the mass (Figure 2B) was then inserted into the right lateral ventricle through the peelaway sheath. Exploration of lateral ventricle revealed an isolated small rounded mass obstructing the right foramen of Monro (Figure 2A). The mass densely adhered to the fornix and choroid plexus. A biopsy taken from the mass (Figure 2B) was then inserted into the right lateral ventricle through the peelaway sheath. Exploration of lateral ventricle revealed an isolated small rounded mass obstructing the right foramen of Monro (Figure 2A). The mass densely adhered to the fornix and choroid plexus. A biopsy taken from the mass (Figure 2B) was then inserted into the right lateral ventricle through the peelaway sheath.
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and histopathological examination of excised tissue mass revealed a small necrotizing granulomas with surrounding lymphocyte accumulation, epithelial cells and Langhans giant cells. The appearance was consistent with that of a tuberculoma. (Figure 3) The cognitive functions of the patient improved significantly after surgery. He was discharged on the 7th post-operative day on oral anti-tubercular drugs and was asymptomatic at 2-month follow-up.

DISCUSSION

Tuberculomas of the brain account for 20 to 30 percent of intracranial tumors in developing countries (13). Tuberculomas develop due to local expansion of a “Rich focus” within the brain parenchyma. They may also originate in the meninges, and may be found in the superficial cortex.

Tuberculomas may be multiple or miliary (6), although most patients have a single or confluent large granuloma with a necrotic centre.

MRI is the diagnostic modality of choice. Tuberculomas are isointense with grey matter on T1-weighted MR images. The lesions show central hyperintensity on T2-weighted images. A hypointense ring may be present within the wall of the tuberculoma on T2-weighted images. Most tuberculomas are further outlined by a collar of high signal, resulting from oedema, on T2-weighted images. Tuberculomas, typically

Figure 1: A) CT head showing asymmetrical hydrocephalus. B-C) MRI T2W axial and coronal images showing asymmetrical enlargement of the right ventricle. Apparent membranous occlusion of the right Foramen of Monro is also seen (arrow head).

Figure 2: Peroperative endoscopic images. A) A single tuberculoma obstructing the foramen (Note the choroid plexus and thalamo-striate vein signifying the Foramen of Monro). B) Biopsy being taken from the mass. C) Septostomy performed between the anterior and posterior septal veins.
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Intracranial tuberculoma has been described at various locations in both the supratentorial and infratentorial compartments. Clinically, it is seen in adults and is characterized by a lengthy course. The clinical features depend on location and include headache, vomiting, blurring of vision, focal seizures, weakness of limbs and neck tilt. The tuberculoma in this case report obstructed the foramen of Monro on one side, resulting in unilateral hydrocephalus.

Oi et al. (12) classified unilateral hydrocephalus into four categories. According to this categorization, category 1 is congenital atresia of the foramen of Monro. Category 2 is morphological obstruction of the foramen of Monro. Functional obstruction of the foramen is category 3, whereas hydrocephalus due to unbalanced intracranial compliance or unilateral parenchymal change falls into category 4. The clinical significance of this classification is questionable and adds nothing to management.

Although ventriculo-peritoneal shunt is a simple method for immediate relief of symptoms associated with hydrocephalus, the complications related to VP shunts are many with a reported incidence of 24–47%, of which abdominal complications are reported to occur in 25% (5). Other rare complications include migration of the peritoneal catheter, spontaneous umbilical CSF fistula, overdrainage, and cervical myelopathy (2,11). Endoscopic fenestration of the occluded foramen of Monro or septum pellucidum is an encouraging method of establishing a CSF pathway.

Endoscopic septostomy is safe, less invasive and results in few complications. Intraoperative navigation and a biportal approach are helpful in establishing the intraoperative orientation in difficult cases (8).

When a diagnosis of tuberculoma is considered, a trial of antituberculous therapy should be instituted even without histopathological confirmation. However, the response to chemotherapy varies as these lesions are known to increase in size on treatment, adding to problem of management (14). Mayer et al. (10) suggested triple drug therapy for the first 3 months. The use of steroids is controversial (10). The optimal duration of treatment is uncertain, although treatment for more than 1 year is advocated by most clinicians (9).

Individualizing the treatment is the key to successful management of intracranial tuberculomas, as in our case where the raised intracranial pressure was successfully treated by endoscopic septostomy followed by antituberculosis drugs to stamp out the disease.

CONCLUSION

An intracranial tuberculoma is a potentially curable disease that must be differentiated from other intracranial space-occupying lesions. Early diagnosis and prompt therapy with antituberculous drugs are important in preventing mortality and reducing morbidity. Hydrocephalus due to meningitis or tuberculoma obstructing the CSF pathway can be effectively treated with neuroendoscopic third ventriculostomy or septostomy wherever indicated. Intraoperative navigation and a biportal approach are helpful in establishing orientation in difficult cases with multiple septa formation...
and wide asymmetry of the ventricles. Antituberculous chemotherapy results in an improvement in almost all and a cure in most cases.

REFERENCES

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