CASE REPORT

Neurocysticercosis presenting as focal hydrocephalus

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SUMMARY

A 40-year-old man presented with a 2-month history of headache, nausea and vomiting, with generalised seizures for the past 15 days. On examination he had bilateral papilloedema, visual acuity was 6/6 in both eyes but perimetry showed right homonymous inferior quadrantanopia. His MRI showed numerous small cystic lesions with eccentric nodules, diffusely distributed in bilateral cerebral and cerebellar hemispheres. There was also focal hydrocephalus involving occipital and temporal horns of the left lateral ventricle leading to its selective dilation. Stool examination showed ova of *Taenia solium*. He was treated with albendazole, prednisone and sustained release sodium valproate for 1 month. His headache resolved and he is free of seizures. Repeat perimetry at 1 month also showed resolution of visual field defect.

BACKGROUND

Cysticercosis is the most common parasitic infection of the central nervous system worldwide, causing 10% of acute neurological cases in endemic areas.¹ In neurocysticercosis brain parenchyma is most commonly affected. Intraventricular cysticercal cysts can be found in 7–30% of cases—the fourth ventricle is the common site followed by third ventricle, lateral ventricles and aqueduct which are relatively uncommon locations.² Twenty-four per cent of patients with parenchymal disease may have intraventricular cysticerci as well.³ Entrapment of the lateral ventricle is a rare entity. It is due to an obstruction of the trigone of the lateral ventricle which seals it off from the rest of the ventricular system.⁴ We present a case of neurocysticercosis (NCC) with entrapment of the lateral ventricle.

CASE PRESENTATION

A 40-year-old man presented with generalised headache over the past 2 months. It was insidious at onset and gradually progressive both in frequency and intensity. It was associated with nausea and vomiting. The patient also developed multiple episodes of generalised tonic-clonic seizure (GTCS) over 15 days with each episode lasting for 5–6 min; these episodes were associated with tongue biting, uprolling of eyes and urinary incontinence. They were followed by loss of consciousness and confusion for a few minutes. There was no history of fever, cough, haemoptysis, paraesthesia, blurring of vision, diplopia, neck pain, difficulty in walking or weakness of any limb. The general physical examination was unremarkable. The patient was conscious and well oriented with no delusion, hallucination,

memory loss or speech abnormality. He had bilateral papilloedema and on perimetry he had right homonymous inferior quadrantanopia. Examination of other cranial nerves was normal. There were no sensory, motor or cerebellar signs.

INVESTIGATIONS

On investigation his haemoglobin was 13.7 g/dL, total leucocyte count was 8400/μL, with differential count of neutrophil 74%, lymphocyte 24% and eosinophil 2%. Renal function test, liver function test, serum proteins and electrolytes, blood sugar, chest X-ray and ultrasonography of abdomen were all within normal limit. Stool routine and microscopic examination showed ova of *Taenia solium*. His MRI showed numerous small cystic lesions, relatively uniform in size, diffusely distributed in bilateral cerebral and cerebellar hemispheres as well as other soft tissues of face and neck. MR appearance of the cystic lesions was similar to cerebrospinal fluid (CSF) on all sequences, with the majority of them showing an eccentric mural nodule representing scolex (Inset) of the viable larva within its fluid containing bladder with no definite evidence of perilesional oedema, representing the vesicular stage of the worm. However, one lesion in the region of the atrium of the lateral ventricle (foramen of Monro) showed evidence of perilesional oedema appearing bright on T2-weighted (figure 1A) and fluid-attenuated inversion recovery sequence (figure 1B) and dark on T1-weighted sequence (figure 1C). There was also mild enhancement of the lesion on postcontrast sequence. Oedema and contrast enhancement represent the host's inflammatory response to dead larva and degenerated cyst. Mass effect of inflamed cyst and associated oedema caused trapped occipital and temporal horns of the left lateral ventricle leading to their selective dilation. Stool examination revealed ova of *T. solium*.

TREATMENT

On the basis of history, clinical examination and MRI findings the patient was diagnosed as a case of neurocysticercosis with trapped occipital and temporal horns of the left lateral ventricle. He was started on prednisolone 60 mg/day (tapered and stopped in 2 weeks), sodium valproate 500 mg twice daily and albendazole 400 mg twice daily (for 4 weeks).

OUTCOME AND FOLLOW-UP

At 1 month follow-up his headache resolved completely without any fresh episode of abnormal movement since starting of treatment. Also, repeat

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Figure 1 MRI showing multiple ring-enhancing lesions. One of the lesions in the region of atrium of lateral ventricle (foramen of Monro) showing evidence of perilesional oedema appearing bright on T2-weighted (A) and fluid-attenuated inversion recovery sequence (B) and dark on T1-weighted sequence (C), which is causing obstruction to cerebrospinal fluid flow leading to focal hydrocephalus. Inset showing a scolex with typical eccentric nodule.

perimetry revealed almost complete resolution of visual field defect. Now the patient is only on sodium valproate.

DISCUSSION

Neurocysticercosis is caused by infection with the larval form of *T. solium*. Clinical pleomorphism of NCC is determined by size and location of the parasite and coexisting granular ependymitis. Seizures are the commonest clinical feature of NCC and in 70% of patients it may be the sole manifestation.⁵ Intraventricular NCC is an uncommon form of cysticercosis. Intraventricular cyst may circulate throughout the CSF pathways but their predilection is for the fourth ventricle and occipital horn of lateral ventricles.⁶ Intraventricular cysticercal cysts are firmly encapsulated and may be single or multiple and frequently associated with multiple parenchymal and subarachnoid cysts.^{7–9} There are many differential diagnoses of an intraventricular cyst which include cysticercal cyst, choroid plexus cyst, ependymal cyst and colloid cyst.¹⁰

In our case the mass effect of an inflamed cyst and associated oedema in the atrium of the lateral ventricle was sealing off the temporal and occipital horn from the rest of the ventricular system. As brain parenchyma has very limited capacity to absorb CSF, continued secretion of CSF from choroid plexus of the lateral ventricle causes selective dilation of the temporal and occipital horn of the left lateral ventricle.^{11 12} This so-called focal hydrocephalus was leading to features of raised intracranial tension.

Clinical features of NCC are highly variable and depend on the location and stage of the lesions. In parenchymal NCC seizures are the most common manifestation. Extraparenchymal disease especially with intraventricular involvement leads to obstruction of CSF drainage pathways and obstructive hydrocephalus which can be generalised or focal.

Treatment of intraventricular NCC consists of antihelminthic drugs (albendazole or praziquantel), endoscopic excision, micro-neurosurgical removal and ventriculoperitoneal shunting. Although endoscopic excision and internal CSF diversion has become the preferred option,² conservative management can also be tried.^{13 14} We have managed our patient conservatively with prednisolone, albendazole and sodium valproate. The patient improved with treatment and at 1 month follow-up he had no headache and was seizure free. Also, repeat perimetry revealed resolution of the field defects.

Entrapment of the third ventricle, fourth ventricle and temporal horn of the lateral ventricle due to various causes such as NCC, hydatid cyst, tumour, failure of ventriculoperitoneal shunt, etc has been mentioned by many authors previously.^{4 15–17}

Learning points

- ▶ Clinical manifestations of neurocysticercosis are highly variable and may include visual field defects.
- ▶ Selective compression of one of the horns of lateral ventricles is possible leading to asymmetric enlargement of the lateral ventricle.
- ▶ Neuroimaging (MRI of the brain) is immensely helpful in complete characterisation of the cause of entrapment of the lateral ventricle.

Contributors AMM, NA and MDS were involved in patient evaluation and management. MA was involved in diagnostic imaging. All the authors contributed significantly in preparing the manuscript and approved the final version.

Competing interests None.

Patient consent Obtained.

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