Cerebral schistosomiasis

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Although schistosomiasis (bilharzia) is one of the most common parasitic infections in humans, schistosomal infection of the nervous system is rare. This report is of an unusual case of primary cerebral schistosomiasis and describes its magnetic resonance imaging appearance.

S Afr J Rad 2013;17(4):143-144. DOI:10.7196/SAJR.878

A 21-year-old previously healthy man presented with symptoms of continuous headache of 3 days' duration. His physical examination was unremarkable. Laboratory investigations were significant for an elevated white blood cell count of 17 700 cells/ml of blood. MRI examination of the brain revealed a tumour-like lesion in the left temporoparietal lobe that was hypo-intense on T1-weighted imaging (Fig. 1) and hyperintense on T2WI (Fig. 2). There was intense perilesional oedema, with considerable mass effect. Additionally, there was a diffuse region of hyperintense T1 signal within the lesion that was attributed to haemorrhage. On post-contrast T1WI (Fig. 3), a cluster of intensely enhancing nodular lesions were detected. Some of these nodules coalesced, forming a confluent lesion, and some were arranged around regions of linear or slit-like enhancement, creating an arborising appearance. The patient then underwent surgical resection of the lesion which was pathologically proven to be a schistosomal granulomatous lesion (Fig. 4). Postoperatively, the patient received praziquantel and corticosteroids, and made an uneventful recovery.

Discussion

An estimated 200 million people globally have schistosomiasis.[1] It is endemic in over 70 tropical and sub-tropical countries worldwide.[1] However, cerebral schistosomiasis (CS) is an uncommon form of schistosomal infection; most cases result from *S. japonicum*.[2]

Individuals affected by CS commonly present with headache, confusion, speech disturbances, motor deficits, visual abnormalities, seizures, altered mental state, vertigo, sensory impairment, vomiting and ataxia.[2] On MRI, CS usually has a pseudotumour-like appearance that is hypo-intense on T1WI and hyperintense on T2WI. It is often associated with an intense perilesional oedema and mass effect.[3,5] On contrast administration, the characteristic feature described is that of a central linear (slit-like) enhancement surrounded by numerous enhancing nodules, creating an arborised appearance.[3,5] Some of the nodules may be clustered together, creating a confluent enhancing mass.[3] At present, the most accurate way of diagnosing CS is the demonstration of schistosoma eggs surrounded by a granulomatous reaction on nervous tissue biopsies.[2,4]

Recently, it has been suggested that the treatment approach for CS should be based on the presence or absence of signs of raised intracranial pressure and/or hydrocephalus.[4] When present, the treatment should include prompt surgical resection followed by antiparasitic medications (praziquantel), corticosteroids and anticonvulsants. In their absence, a non-invasive approach using a combination of praziquantel, corticosteroids and anticonvulsants should be tried.[4]

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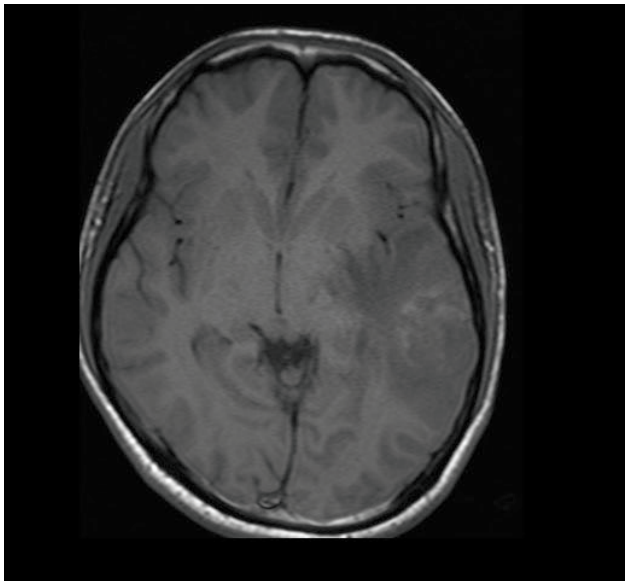

Fig. 1. Axial MR T1WI demonstrating a hypo-intense mass-like lesion of the left temporoparietal region with mass effect. The diffuse hyperintense signal within the lesion can be attributed to haemorrhage.

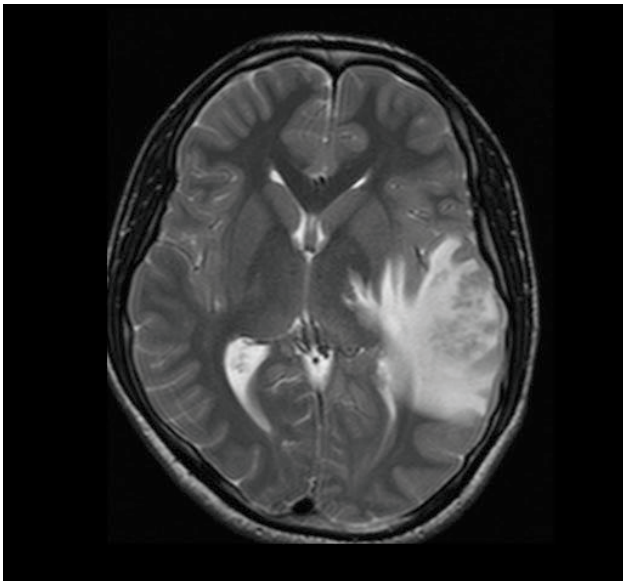

Fig. 2. Axial MR T2WI demonstrating a hyperintense mass-like lesion with intense perilesional oedema, compression of the ipsilateral lateral ventricle, effacement of surrounding sulci, and a noticeable shift of the midline to the right.

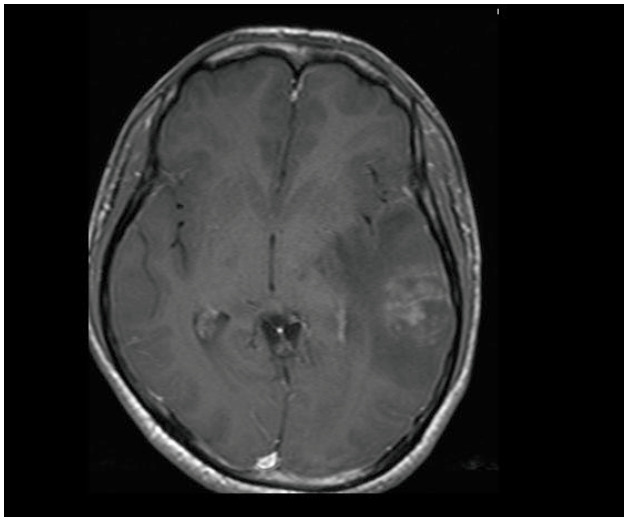

Fig. 3. Axial MR T1WI post contrast revealing a cluster of intensely enhancing nodules within the mass, each measuring approximately 1 - 3 mm in size. Some of the nodules appear to have coalesced together, creating a confluent enhancing lesion. Also noticeable are subtle regions of linear or slit-like enhancement surrounded by closely packed nodules, creating an arborising appearance.

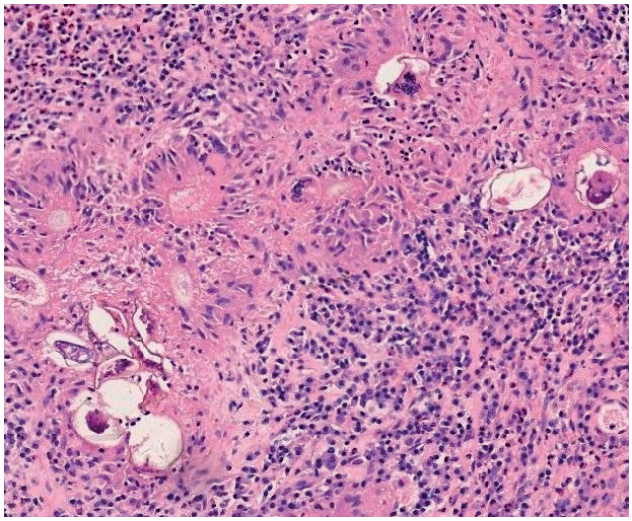

Fig. 4. Haematoxylin- and eosin-stained histopathological specimen following surgical excision, demonstrating numerous granulomas surrounding eggs of S. japonicum. *The image also depicts an intense inflammatory infiltrate.*