SQU Med J, February 2011, Vol. 11, Iss. 1, pp. 119-121, Epub. 12th Feb 11
Submitted 30th Jun 10
Revision Req. 26th Jul 10, Revision recd. 7th Aug 10
Accepted 29th Sept 10

INTERESTING MEDICAL IMAGE

Solitary Cerebral Cysticercus Granuloma

Ramachandiran Nandhagopal

وَرَمٌ حُبَيبِيّ وحيد لكيسَة مُذَنَّبَة في الدماغ

راماتشانديران ناناداجوبال

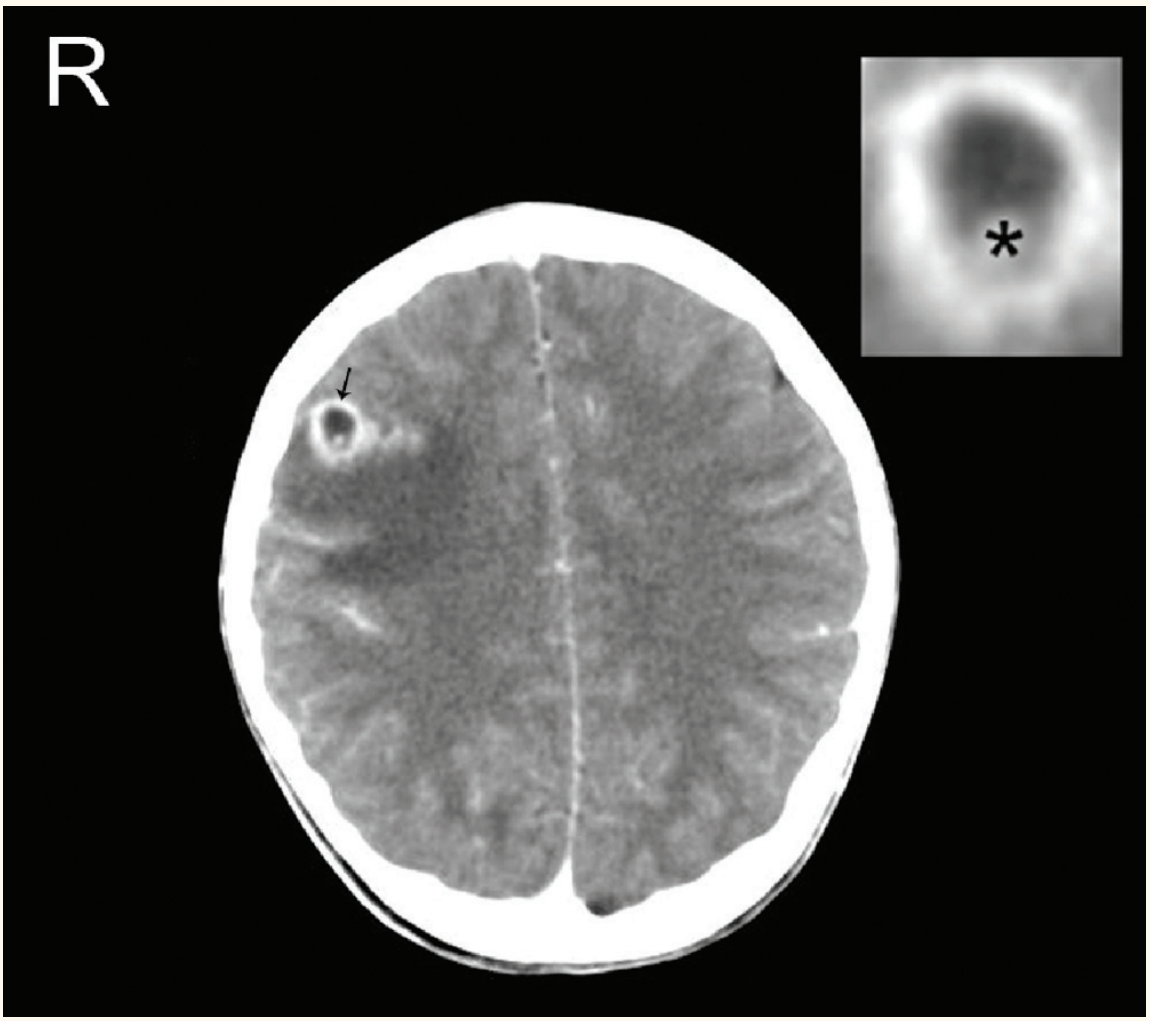

Figure 1: Cranial computerised tomography scan demonstrating a single solitary enhancing right frontal cystic lesion (arrow) with eccentric mural nodule-scolex (asterix in the inset) and perilesional oedema.

A 7-year-old boy from South India presented with recurrent left motor seizure with secondary generalisation. The computed tomography scan of his brain [Figure 1] demonstrated a solitary enhancing cystic lesion with eccentric mural nodule (scolex) in the right frontal region. Based on the epidemiological profile (he came from an endemic area), as well

Department of Medicine, Sultan Qaboos University Hospital, Muscat Oman; Former affiliation: Department of Neurology, Sri Venkateswara Institute of Medical Sciences (SVIMS), Tirupati, India.
Email: rnandagopal@yahoo.com

as the clinical and imaging findings,[1] a diagnosis of solitary cerebral cysticercus granuloma was made. He was treated with a short course of anti-cysticercal treatment (albendazole), prednisolone (after excluding spinal and ocular cysticercosis) and phenytoin. Follow-up imaging at 6 months revealed significant improvement.

Solitary cysticercal cysts are an important cause of symptomatic seizure in endemic areas. Other clinical manifestations include headache and focal neurological deficits. In the natural history of neurocysticercosis, the following stages of evolution of parenchymal larval cysts can be observed on neuroimaging: viable cyst, granulomatous cysticercosis and disappearance of cyst with or without residual calcification.[2] In the viable cyst stage, the cyst wall is not visible on imaging and the cyst demonstrates little or no perilesional oedema. Ring-like or nodular areas of enhancement with prominent perilesional oedema mark the phase of granulomatous cysticercosis.

The image shown here demonstrates the granulomatous cysticercosis as a ring-enhancing lesion with scolex and peri-lesional oedema. Ultimately, the remnant of the cyst is either not visible on the imaging or observed as calcified lesion(s).

Medical treatment for viable or granulomatous cysticercosis includes antihelminthic medication, standard anticonvulsants for seizures and symptomatic medication such as anti-inflammatory drugs such as steroids. Antiparasitic therapy for solitary cysticercus granuloma is shrouded in controversy for the following reasons: 1) solitary cysticercus granuloma may resolve spontaneously without antihelminthic treatment; 2) the parasite cannot grow and develop further in the cerebral parenchymal location, and 3) antihelminthic treatment kills the parasite that can potentially cause neurological complications such as a transient increase in seizure frequency, headaches, and raised intracranial pressure. The latter complication is observed especially in patients with multiple cysticercus granulomata. The arguments for cysticidal therapy include rapid disappearance of cyst(s) and the possibility of less residual calcification.[2] Albendazole in a dose of 15 mg/kg/day divided into two doses is the antihelminthic drug widely employed. The duration of treatment was 1 month in older studies,[3] but this has been reduced to 15 days and even 1 week in later studies.[4,5] It is usually administered along with corticosteroids to prevent the neurological complications associated with the degeneration and death of the parasite as mentioned above. A recent Cochrane Database systematic review found evidence for a reduction both in the number of viable lesions and in seizure frequency in those patients with non-viable cysts on albendazole therapy.[6] The other available antihelminthic drug is praziquantel, usually given in dose of 50 mg/kg/day for 2 weeks. A single day course of praziquantel has also been employed.[7] Surgery is usually reserved for extraparenchymal neurocysticercosis such as an intraventricular cyst, spinal cysticercosis causing spinal cord compression, for hydrocephalus, or for ophthalmic cysticercosis.[8]

In general, the seizure outcome in solitary cerebral cysticercosis is good in view of the symptomatic nature of the seizure. The optimal duration of anticonvulsant prophylaxis has not been finally decided. Some authors favour anticonvulsant prophylaxis for 6 months and repeat the neuroimaging scan (by CT or magnetic resonance imaging) to look for resolution of the lesion with a view to tapering anticonvulsants in patients who are fit free,[8] while others have continued anticonvulsant therapy for 2 years.[9] Patients with residual calcification may be at risk of recurrent seizures.

The image is mainly presented here to highlight the characteristic appearance of cysticercus lesion termed 'hole with a dot';[1] the hole represents the cysticercus ring lesion itself and the dot the scolex. For physicians in non-endemic regions such as Oman, awareness of this imaging characteristic aids in the recognition of cerebral cysticercosis in patients who originate from or have travelled to endemic areas.

References

1. Del Brutto OH, Rajshekhar V, White AC Jr, Tsang VC, Nash TE, Takayanagui OM, et al. Proposed diagnostic criteria for neurocysticercosis. Neurology 2001; 57:177–83.
2. Garcia HH, Evans CA, Nash TE, Takayanagui OM, White AC Jr, Botero D, et al. Current consensus guidelines for treatment of neurocysticercosis. Clin Microbiol Rev 2002; 15:747–56.
3. Agapejev S, Meira DA, Barraviera B, Machado JM, Pereira PC, Mendes RP, et al.

Neurocysticercosis: treatment with albendazole and dextrochloropheniramine (preliminary report). Rev Inst Med Trop Sao Paulo 1988; 30:387–9.

4. Garcia HH, Gilman RH, Horton J, Martinez M, Herrera G, Altamirano J, et al. Albendazole therapy for neurocysticercosis: a prospective double-blind trial comparing 7 versus 14 days of treatment. Cysticercosis Working Group in Peru. Neurology 1997; 48:1421–7.
5. Thussu A, Chattopadhyay A, Sawhney IM, Khandelwal N. Albendazole therapy for single small enhancing CT lesions (SSECTL) in the brain in epilepsy. J Neurol Neurosurg Psychiatry 2008; 79:272–5.
6. Abba K, Ramaratnam S, Ranganathan LN. Anthelmintics for people with neurocysticercosis. Cochrane Database Syst Rev 2010; 3:CD000215.
7. Pretell EJ, Garcia HH, Custodio N, Padilla C, Alvarado M, Gilman RH, et al. Short regimen of praziquantel in the treatment of single brain enhancing lesions. Clin Neurol Neurosurg 2000; 102:215-8.
8. Sinha S, Sharma BS. Neurocysticercosis: a review of current status and management. J Clin Neurosci 2009; 16:867-76.
9. de Souza A, Thennarasu K, Yeshraj G, Kovoor JM, Nalini A. Randomized controlled trial of albendazole in new onset epilepsy and MRI confirmed solitary cerebral cysticercal lesion: effect on long-term seizure outcome. J Neurol Sci 2009; 276:108-14.