

enzymes, thyroid function, erythrocyte sedimentation rate, anti-streptolysin O test, rheumatoid factor, high-sensitivity C-reactive protein, blood cultures, and autoantibody series (such as antinuclear antibodies, ds-DNA and so on). The test results of pathogens (bacteria, viruses and treponema pallidum) were also negative in blood. Routine electroencephalogram showed there was no spike or slow waves. Another test on cerebrospinal fluid (CSF) showed no obvious abnormalities. His magnetic resonance angiography revealed that intracranial arteries were normal. His previous MRI showed that all lesions were distributed in the posterior circulation. After reading his MRI report, the consensus was to perform diffusion weighted imaging (DWI). We found hyper-intensity within the areas of lesions [Figure 1]. Carotid artery ultrasound revealed no abnormalities. Transthoracic echocardiography confirmed there was a vegetation (10 mm × 4 mm) attached to mitral valves [Figure 2]. These imaging tests were consistent with IE and cerebral embolism (caused by IE).^[5] The patient refused a heart operation, so he was treated with 1.6 million units of penicillin G sodium for 4 weeks. After 6 months of follow-up, the patient significantly improved and was back to normal life. His re-examination of transthoracic echocardiography showed there was no

mitral valves vegetation.

DISCUSSION

Clinical manifestations of IE have a variety of symptoms and signs. These include fever, arterial embolic phenomena (cerebral embolism, renal embolism, pulmonary embolism, *etc.*), heart murmur, clubbing of fingers and toes, and other symptoms. Laboratory examinations may show leukocytosis, anemia, rapid erythrocyte sedimentation rate, positive blood culture, as well as vegetations and other powerful identifiers in echocardiography.^[5] In recent years, however, many atypical IE patients had complications as their initial symptoms. For example, some studies showed that about one-third of IE patients developed stroke.^[6]

Our patient also got atypical IE features: considering his symptoms, it is quite natural to associate fever with headache, vomiting and epileptic seizures. He seemed to respond well to the initial treatment of intravenous acyclovir and mannitol. For this reason, he was diagnosed as encephalitis. However, negative results of CSF test were not in favour of this conclusion. After reconsidering the whole course of disease, it was hypothesized that all his symptoms were part of a basilar syndrome. In fact, except heart murmur or nervous system manifestations, there was no other sign. The echocardiography of the patient ultimately confirmed there was a vegetation (10 mm × 4 mm) attached to mitral valves. This is a strong predictive factor of embolic events.^[7] Besides, from the MRI results, we noticed there were lesions in bilateral cerebellar hemisphere of his brain. This was not among the commonest locations for herpes simplex encephalitis (in fact, characteristic changes are in the temporal lobes) and there was some evidence to support cardioembolism. Thus, it is likely that an event of cardiac embolism has taken place, since many areas of intracranial arteries were affected, especially bilateral lesions (or lesions in both anterior and posterior circulation).^[8] For our patient, his DWI results were in agreement with our diagnosis, in fact all the lesions were distributed in multiple areas in posterior circulation. This is consistent with cardioembolic lesions in IE patients.^[9] Additionally, continual variant symptoms occurred as expected in cardioembolism.

Based on the patient's clinical manifestations, it was very likely that streptococci caused his infective endocarditis. For this reason, penicillin was chosen as first line treatment. However, blood culture and anti-streptolysin O test were both negative. It is worth noting here that there might be several explanations

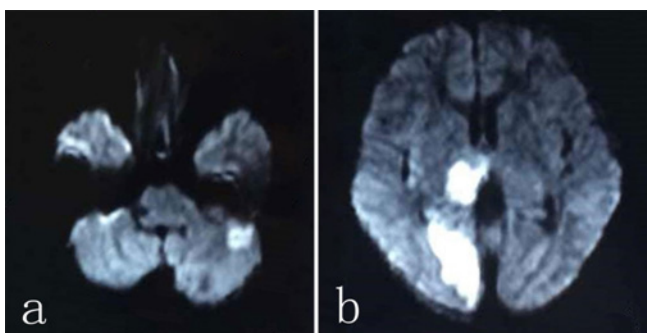


Figure 1: Diffusion weighted imaging and found enhancement within multiple lesions in (a) bilateral cerebellar hemisphere; (b) the right thalamus and occipital lobe



Figure 2: Transthoracic echocardiography showed there was a vegetation (10 mm × 4 mm) attached to mitral valves

