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Wernicke's Encephalopathy in Patients with Hyperemesis Gravidarum

J H Tan, K H Ho

ABSTRACT

Our two patients presented with Wernicke's Encephalopathy (WE) resulting from prolonged hyperemesis gravidarum. This is an unusual cause of WE, a potentially fatal medical emergency due to thiamine deficiency. We discuss the clinical settings, presentation, diagnosis, neurophysiological and radiological findings, treatment and outcome of WE in these two cases and the neuropathologic correlation of this condition. We stress upon the importance of early diagnosis and prompt treatment of WE.

Keywords: Wernicke's Encephalopathy, hyperemesis gravidarum

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INTRODUCTION

Wernicke's Encephalopathy (WE) is a potentially fatal but readily reversible medical emergency caused by thiamine deficiency. It presents with ocular and gaze palsies, ataxia and derangement of higher mental function. WE is virtually always alcohol-related in developed countries. We report two cases occurring in the unusual setting of hyperemesis gravidarum (HG) of one month's duration in pregnant women to illustrate the importance of early recognition of this rare illness in order to avoid permanent neurological deficit and possible maternal and fetal mortality. Only about 25 similar cases have previously been reported in the literature.

Department of Medicine
National University Hospital
5 Lower Kent Ridge Road
Singapore 119074

J H Tan
Neurology Registrar

K H Ho
Neurology Consultant

Correspondence to:
Dr Tan Joo Hui
Tel: (65) 772 4124
E-mail: junetan99@yahoo.com

CASE REPORTS

Case 1

Our first patient was a 29-year-old gravida 7 para 6 with a month's history of HG during which she received intravenous fluids and antiemetics. At 14 weeks of gestation, she developed giddiness and rapidly became obtunded. A diagnosis of WE was made upon referral to the neurology service 18 hours later. On examination, she was drowsy and disorientated. Bilateral horizontal and vertical gaze-evoked nystagmus and a left-sided gaze palsy were present. Her pupils were equal and reactive and her fundi normal. Her lower limb reflexes were absent. An MRI of the brain showed hyperintense areas surrounding the 3rd ventricle, Aqueduct of Sylvius and within the mammillary bodies. Her brainstem auditory evoked responses showed prolonged latencies of waves I, III and V on the right. An EEG revealed generalised slowing consistent with a diffuse encephalopathy. A nerve conduction study showed mild axonal sensory peripheral neuropathy, a concomitant nutritional manifestation which occurs in more than 80% of patients with WE.

She made a rapid but incomplete recovery with 5 days of intravenous (IV) thiamine 50 mg daily followed by an oral dose of 10 mg daily. The eye signs have nearly resolved by the 3rd day but she remained severely ataxic on discharge two weeks later. After three months, she still had persistent impairment of long term memory, lower limb areflexia and an incapacitating ataxia. A repeat MRI of the brain was normal.

Case 2

The second patient had a less florid presentation. She was a 28-year-old gravida 1 at 15 weeks of gestation with a one month history of HG. After three days of treatment with intravenous fluids, she was noted to be confused. On admission to the neurology ward, she was alert but disorientated, with impaired short-term memory and bilateral gaze-evoked nystagmus. There was no dysmetria, her power was normal and reflexes present. A sensory examination was normal. Nerve conduction studies did not reveal any peripheral neuropathy. IV thiamine 50mg daily was commenced after which she made a rapid and complete recovery except for some difficulties with short-term memory She declined an MRI of the brain.

DISCUSSION

Thiamine is an essential cofactor for energy metabolism. Delayed treatment leads to irreversible neuronal necrosis and gliosis especially of the medial dorsal nuclei which manifests as incomplete recovery of memory defects. However, the prompt reversibility of ocular

signs indicates a biochemical instead of a structural abnormality in the sixth and third nerve nuclei and vestibular nuclei[1]. Only 2-3 mg of thiamine is needed to reverse the ocular signs, but a daily dose of 50 mg intravenously is necessary to replenish thiamine stores[2].

The ocular signs of WE are associated with oedema, necrosis, demyelination and petechial haemorrhages but relatively minimal loss of neurons in the pontine and midbrain gaze centres and the vestibular nuclei[5]. Lesions in the superior cerebellar vermis account for the ataxia. Amnesic defects are related to lesions in the medial dorsal and possibly posterior dorsal nuclei of the thalami[1,2]. The mammillary bodies are most consistency involved but their contribution with respect to loss of memory function is controversial[2,3].

An MRI of the brain may show increased T2 signal surrounding the aqueduct and third ventricle and within the medial thalamus and mammillary bodies. The sensitivity of MRI in detecting these lesions has not been determined, hence a normal MRI does not rule out acute WE[4]. However, the first patient's MRI revealed lesions in the classical sites.

Our first patient was also presented with the typical triad of confusion, ocular signs and ataxia. Her ocular signs rapidly reversed with IV thiamine but the ataxia persisted. The second patient, like most others, did not display the full spectrum of clinical abnormalities[6] and the diagnosis could easily have been missed. These cases illustrate the importance of early recognition of this rare illness in the unusual setting of HG. It is essential to institute prompt treatment to avoid permanent neurological deficit and possible maternal and fetal mortality. The definitive diagnosis of thiamine deficiency lies in the detection of a decreased blood transketolase activity. Unfortunately this biochemical diagnosis is time-consuming and unavailable to most healthcare settings. A diagnosis of WE should be suspected once any one of the neurological triad is presented in a patient with HG. Fifty to 100 mg daily of thiamine should be administered intravenously as soon as the suspicion is raised. The oral route is not an acceptable alternative as absorption is slower and negligible in the presence of hyperemesis. Oral thiamine can be commenced when the patient has improved neurologically and is able to tolerate orally. This is to be continued as long as the patient remains at risk of thiamine deficiency. A literature search shows that WE in HG occurred after 3-4 weeks of persistent vomiting. Therefore, we suggest prophylactic IV thiamine for women with HG of more than two weeks in duration. This is a relatively innocuous treatment but one must be aware of the occasional anaphylactic shock that may accompany IV thiamine.

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