

Morning Sickness to Morning Blues

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Abstract

A 24 year primigravida with history of hyperemesis gravidarum presented early morning with mental confusion and weakness. Upon investigation she was diagnosed with Wernickes' encephalopathy. She was successfully treated with thiamine and had an uneventful birth of a healthy baby.

Keywords: Wernickes' Encephalopathy; Hyperemesis Gravidarum; Thiamine; Magnetic Resonance Imaging.

Introduction

One of the commonest ailments in pregnancy is nausea and vomiting affecting up to 80% cases.^{1,2} It's severe form called hyperemesis gravidarum (HG) is the leading cause for hospitalisation in the first half of pregnancy and is found in around 3% cases.^{2,3} HG can cause maternal weight loss, dehydration, electrolyte imbalance, malnutrition, vitamin deficiencies and peripheral neuropathy.² HG can result in serious neurological complications like central pontine myelinolysis and Wernicke encephalopathy (WE).^{4,5} Wernicke's encephalopathy comprises of the triad of acute-onset encephalopathy, ophthalmoplegia, and ataxia.⁶ WE is encountered in severe thiamine deficient states like chronic alcoholism, prolonged parenteral nutrition, gastrointestinal carcinoma, eating disorders, chronic diarrhoea and persistent vomiting.⁷ Sheehan in 1939 first described the relation between HG and WE.⁸ Hyperemesis gravidarum leading to WE is rare but with serious maternal and foetal complications. Presented here is a case report describing our clinical experience with this unusual phenomenon.

Case report

A 24-year-old primigravida at 12 weeks of gestation presented to the emergency with weakness, mental confusion, and visual disturbance. On examination, her pulse was 100 beats per minute with blood pressure 100/60 mm Hg. She was disoriented with photoreactive pupils, preserved visual acuity and nystagmus. She had an atypical gait with history of occasional falls. She revealed history of excessive nausea vomiting since her conception and had been admitted to hospital on three occasions priorly for management of hyperemesis gravidarum. Her investigations were: haemoglobin 11 gm/dL; electrolytes: potassium 2.8 mmol sodium 133 mmol; blood glucose: 60mg/dl; renal, liver and thyroid function tests were normal. Urine analysis showed ketonuria. Electrocardiogram revealed sinus tachycardia. Ultrasound showed single alive intrauterine foetus of 12 weeks gestation. Magnetic resonance imaging (MRI) brain reported bilateral symmetrical altered signals intensities in the medial and posterior aspect of both thalami, periaqueductal grey matter and tectal plate suggesting Wernicke's encephalopathy [Figures 1, 2, and 3]. The patient was admitted and treated by a multidisciplinary team of obstetricians, neurologist, intensivist and ophthalmologist. She was administered normal saline along with potassium replacement. She was also given Thiamine 500 mg intravenous loading_dose every 8 hours for 3 days, and then maintained with 100 mg orally for another 14 days. The patient showed slow improvement in her neurological condition and was discharged after 2 weeks of hospitalization. During antenatal follow-up, the patient had normal foetal growth and her ophthalmologic examination was normal within 3 months of initiation of treatment. She was continued with thiamine supplementation 100 mg orally thrice daily throughout her pregnancy. She had slight abnormal gait till her delivery. The patient underwent caesarean section at 39 weeks 2 days because of contracted pelvis: her per vaginal examination revealed that the sacral promontory could be palpated, the pelvic

sidewalls were convergent with small inter-ischial diameter and narrow subpubic angle. She delivered a healthy baby of 2.8 kg. Her postpartum period was uneventful and was discharged on 5th day after her surgery.

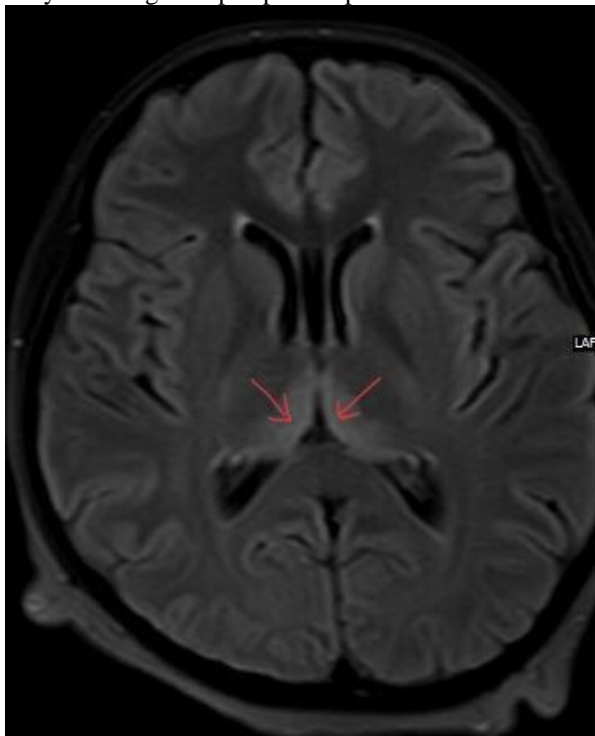


Figure 1: Thalamic.

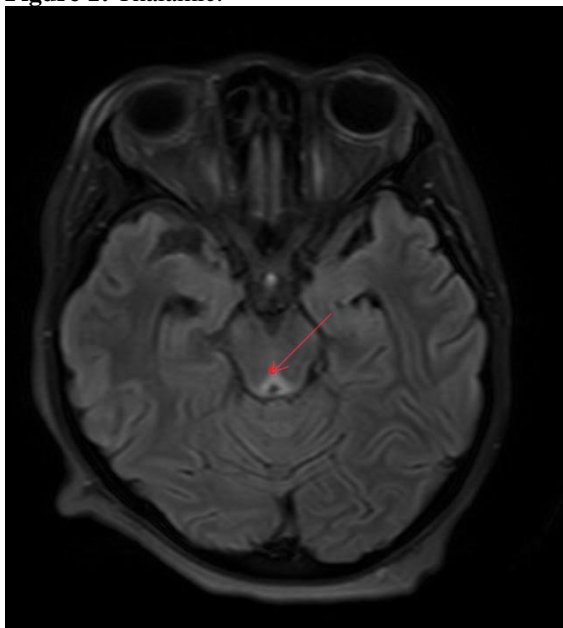


Figure 2: Peri aqueductal.

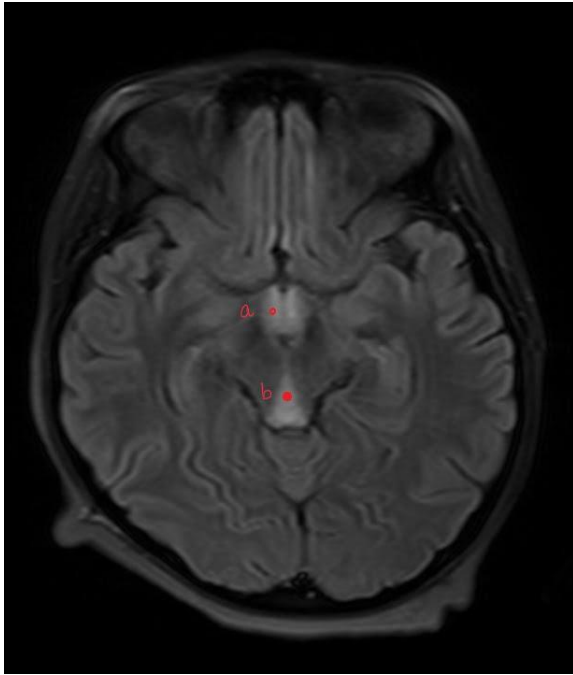


Figure 3: Tectal mammillary.

Discussion

WE is more common in alcoholics but can also occur in non-alcoholic patients where its prevalence varies from 0.04% to 0.13%.⁹ It can also be found in cases of anorexia nervosa, chemotherapy induced vomiting, gastrointestinal disease, haemodialysis and HG.⁴ The main reason behind WE is the deficiency of thiamine whose active form called thiamine pyrophosphate acts as a coenzyme in many biochemical pathways in brain.¹⁰ In the thiamine deficient state the transketolase, alpha-ketoglutarate dehydrogenase, and pyruvate dehydrogenase pathways in the brain are disrupted leading to neuronal damage.¹⁰ Practically WE can be diagnosed by the Caine's operational criteria since not all patients manifest the classical triad of encephalopathy, ophthalmoplegia, and ataxia. Caine's working criteria for WE are: clinical triad of symptoms ; autopsy evidence of WE or clinical response to thiamine.¹¹ The defining signs and symptoms according to Caine's criteria are: dietary deficiencies, oculomotor changes (nystragmus or ophthalmoplegia), cerebellar dysfunction (falling or imbalance) and altered mental state (delirium, confusion, cognitive disturbances).¹¹

The daily requirement of thiamine for normal females is 1.1 mg/day, which increases to 1.5 mg/day during pregnancy and lactation.¹² The requirement is further escalated in cases of HG where absorption is reduced. Determination of blood transketolase activity and thiamine pyrophosphate reflects the thiamine status in the body.¹³

If correction of fluid imbalance in HG is done with dextrose without thiamine supplementation, WE can be precipitated. A recent systematic review of WE in pregnancy revealed a maternal mortality rate of 5% foetal mortality of 50% despite diagnosis and treatment.⁵ WE has also been associated with permanent neurologic damage and Korsakoff syndrome. Korsakoff syndrome is characterized by marked irreversible deficiency of anterograde and retrograde memory and can be fatal in 10–20% of cases.⁹ The foetal complications associated with WE are miscarriage, preterm birth, intrauterine growth retardation and intrauterine foetal death in case of severe maternal compromise.⁹ The typical findings in MRI are symmetrical hyperdense lesions in the thalamus, mammillary bodies, tectal plate, and periaqueductal area.¹³ The diagnosis of WE is based on the clinical findings and rapid reversal of symptoms with thiamine.

Our patient had the classical triad of ophthalmoplegia, ataxia and encephalopathy with HG and corroborative MRI images. Due to the clinical severity it was decided to treat her with a high thiamine dose of 500 mg intravenously thrice daily for 3 days followed by 100 mg thrice daily throughout pregnancy. This regimen was advised by the neurologists based on their clinical experience and no adverse effects of thiamine were noted. Currently there is no universally accepted guidelines for the optimal duration, route and dose of thiamine.¹⁴ The

Royal College of Physicians London recommend an initial dose of IV Thiamine 500mg thrice daily for three days and IV 250 mg daily for next 3-5 days followed by 100 mg orally for rest of hospital stay and outpatient treatment.¹⁵ The recommendation as per the European Federation of Neurological Societies is intravenous thiamine 200mg thrice daily before carbohydrate intake and continued until there is no further betterment in signs and symptoms.¹⁶ In a review of 49 cases Chiossi et al. concluded that resolution of symptoms required months and complete remission was only in 28%, spontaneous fetal loss was 37% and elective abortion was in 10% cases.¹² Although WE due to HG is unusual, clinicians must be aware of it and provide prompt management.

Conclusion

Wernicke's encephalopathy associated with hyperemesis is a rare but life threatening condition. This case report highlights the importance of multidisciplinary management and favourable maternal and foetal outcome with thiamine supplementation. Such rare case reports add more evidence to the clinical practise.

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