CASE REPORT

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Acute intermittent porphyria: Diagnosis per chance

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Abstract

Objectives: To report a case of acute intermittent porphyria (AIP) diagnosed by chance during routine investigations. Clinical Presentation and Intervention: A 21-year-old female presented with vague gastrointestinal symptoms. Upon admission, she was disoriented. Later she developed generalized seizures and was treated with phenytoin, but the condition worsened. Upon investigation, her liver function, renal function, blood sugar level and electrolytes were within normal limits. When kept for routine laboratory testing, the color change in urine prompted us to investigate for porphyria. It was positive for phorphobilinogen (PBG) and uroporphyrin. Since AIP had been diagnosed, the initial treatment with phenytoin was discontinued with a favorable outcome. A screening test for PBG in urine by Ehrlich's reagent was performed on the patient's mother and was positive. Conclusion: A high degree of suspicion at the laboratory can also determine the diagnosis of AIP, which is often missed by the clinician.

Keywords: Acute intermittent porphyria, phorphobilinogen, puerperal psychosis, seizures

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Introduction
Acute intermittent porphyria (AIP) is a metabolic disorder of the heme synthetic pathway with an autosomal dominant inheritance. Mainly, the defective enzyme is hydroxymethylbilane synthetase. Therefore, a precursor metabolite like phorphobilinogen (PBG) is excreted in excess, which leads to a change in the color of urine on oxidation. Acute attacks are more common in young females, presenting with vague gastrointestinal and neuropsychiatric manifestations, which may be precipitated by drugs like anticonvulsants and sex steroids. Being a rare disorder with vague presentations, the diagnosis is often missed by clinicians. Here is a case report that shows how alert laboratory personnel can also determine the diagnosis of AIP.

Clinical presentations: A 21-year-old female presented with nausea, vomiting and vague abdominal pain for 2 days. She also had headaches for the prior few days and was disoriented at the time of admission. After admission, she had episodes of generalized tonic-clonic seizures. She had experienced such episodes occasionally, since reaching puberty. Her blood pressure remained high for 3 days following the seizures. She had been married 3 years earlier and has a 2-year-old daughter. During the post-partum period, she had a similar attack with psychological problems, which had been diagnosed as puerperal psychosis. The exact etiology of such intermittent episodes had never been established. She had no history of hematemesis and/or malena and there was no abdominal distension. Bowel sounds were also normal. She was treated with phenytoin to control the convulsions but the condition worsened. The transient rise in blood pressure during the convulsions was controlled by atenolol.

The investigation report showed Hb - 12.5 gm%, TLC - 8000/cmm, DLC - N 76 L 22 E 1 B 0 M 1 and ESR - 12.5 mm/Hr. Her platelet count was normal. Liver function and renal function did not show any abnormality. There was no significant finding in the chest X-ray. Blood sugar and electrolytes were within normal limits. An ultrasonography (USG) of the abdomen and a CT scan of the brain were also found to be normal. The patient's urine culture was negative and other routine urine tests were normal, but on standing, the urine was dark red in color. The fresh urine sample was tested positive for PBG using the Watson Schwartz Method. The neuropsychiatric features without skin lesions along with the positive urine tests confirmed the diagnosis of AIP. The urinary PBG was measured using the Erhlich reagent and was found to be 5400 mmol/day during the attack. The initially prescribed anticonvulsant drug (Phenytoin) did not improve the clinical condition (seizures). The condition improved after symptomatic management, IV glucose drip and withdrawal of anticonvulsant. The family members were screened for urine PBG and only the mother was found to be positive. The patient’s 2-year-old daughter had a negative report.

Discussion

AIP is diagnosed only out of a high index of suspicion in the cases of neuropsychiatric manifestations along with GI symptoms. In this rare metabolic disorder of the heme synthetic pathway, the defect lies in the level of phorphobilinogen deaminase (or uroporphyrinogen I co-synthase or hydroxymethylbilane synthase). The acute attack is typically found in women after puberty, indicating putative nexus with sex hormones,
which is also evidenced by endo or exogenous sex steroids' role in precipitating attacks. Drugs like anticonvulsants have an adverse effect. Autonomic dysfunction may be associated with AIP, resulting in hypertension as found in this case. The urinary excretion of accumulated metabolites such as PBG is used for diagnostic purpose. These metabolites were found to be highly positive during clinical exacerbation. To differentiate from other neuropsychiatric porphyrias, absence of skin lesions and uroporphyrin I excretion are useful findings. The metabolic blocks before the level of porphyrin synthesis, manifests without skin lesions and leads to an abnormal synthesis of uroporphyrin I. The treatment is largely symptomatic along with the withdrawal of precipitating factors. Glucose has an inhibitory effect on Aminolevulinic acid (ALA) synthase, the key enzyme in the heme synthetic pathway. The disorder being of autosomal dominant inheritance, screening tests were conducted on family members. A positive report was found only from the patient's mother. As the disease remains latent until puberty, the daughter of the patient should be screened regularly, although she had a negative screening test.

A high index of suspicion is required to diagnose a case of AIP in patients with vague abdominal symptoms and/or neuropsychiatric manifestations and the following factors:

- post-pubertal female
- menstruating
- pregnant or in the post-partum period
- using oral contraceptives or anticonvulsants
- change in urine color after collection

Diagnostic urine testing should be done during the period of attack. The Watson Schwartz method is a sensitive and quick method of diagnosis. Screening tests for urine PBG in family members is necessary.

References
