Case Report

A rare case of acute intermittent porphyria with ichthyosis vulgaris in a young boy

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Abstract

Acute intermittent porphyria (AIP) and ichthyosis vulgaris both are autosomal dominant disorders with incomplete penetrance caused by the deficiency of porphobilinogen deaminase enzyme and filaggrin protein, respectively. We report a rare case of a 9-year-old boy having two genetic diseases with an unclear association. An acute attack of AIP is characterized by gastrointestinal symptoms and neuropsychiatric manifestations. Although rare in the first decade of life, the presence of reddish urine with a typical presentation such as abdominal pain, hypertension, seizure, and paresthesias lead us to the diagnosis of AIP. The precipitating factor in the present case was prolonged fasting in Ramadan.

Keywords: Acute intermittent porphyria, filaggrin, ichthyosis vulgaris, porphobilinogen

Introduction

The porphyrias are a group of diseases resulting from inherited deficiencies of enzymes involved in heme biosynthetic pathway. Acute intermittent porphyria (AIP) is inherited as autosomal dominant (AD) trait with incomplete penetrance, caused by a deficiency of hydroxymethylbilane synthetase or porphobilinogen (PBG) deaminase enzyme.[1] Clinical expression is highly variable, so family history may not be positive. Acute attacks are characterized by gastrointestinal and neuropsychiatric manifestations. The disease commonly manifest in the third and fourth decade and rarely in pediatric age group.[2] Ichthyosis vulgaris (IV), a common disorder of keratinization, is inherited in an AD fashion. It develops a few months after birth. The skin shows scales that are large and adherent on the extensor surfaces of the extremities, resembling fish scales, and are small elsewhere. The flexural creases are spared.[3] Here, we reported an interesting case of a 9-year-old child having two AD diseases with different chromosomal location and management strategy for an acute emergency in this patient. This is the first case report of AIP with IV in young boy to the best of our knowledge.

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Access this article online

Quick Response Code:

Website: www.jfmpc.com

DOI: 10.4103/jfmpc.jfmpc_141_17

Case Report

A 9-year-old Muslim boy born of consanguineous marriage was admitted with complaints of abdominal pain and vomiting with tingling sensation in both the lower limbs for the past 4 days and generalized tonic–clonic seizures 2 h before admission. On admission, the child had Glasgow coma scale of 13/15, hypertension (160/120), and tachycardia (138/min). On examination, skin was dry scaly all over the body [Figure-1a] with similar skin manifestation in his first cousins. Rest other systems were normal. Provisional diagnosis of hypertensive emergency with congenital ichthyosis was made.

The child was started on sodium nitroprusside infusion and loaded with phenytoin. Laboratory examination revealed hyponatremia (116 mEq/L) and mild hypokalemia (3.4 mEq/L).

How to cite this article: Varshney GA, Saini PA, Ghure U. A rare case of acute intermittent porphyria with ichthyosis vulgaris in a young boy. J Family Med Prim Care 2018;7:261-3.

Other investigations including ultrasonography abdomen and kidneys, ureters, bladder were normal.

On catheterization, urine was reddish in color but on routine microscopy red blood cells, hemoglobin, and myoglobin were absent. Thus, in view of abdominal pain, hypertension, and hyponatremia, AIP was suspected and urine for PBG was sent. It was strongly positive in Watson-Schwartz test. For confirmation 24 h urinary, PBG was done which was highly raised (92.1 mg/24 h). On enquiry of the parents regarding possible precipitating factors, we found significant history of fasting in Ramadan days. Skin biopsy confirmed the diagnosis of IV [Figure 1b].

The child was effectively managed with 10% dextrose and labetalol infusion (0.5 mg/kg/h). Gradually within 96 h hypertension was controlled and child was shifted to oral labetalol with no new episode of seizure. Phenytoin was gradually tapered and stopped. Hypertonic saline (3%) was given for hyponatremia, and sodium levels were improved within 72 h. For dry scaly skin emollients were given.

Abdominal pain was continued till 6th day of admission and managed by tramadol hydrochloride whenever required. The patient was discharged on high dose of oral labetalol (30 mg/kg/day) which was gradually tapered on follow-up in next 2 weeks. Family was counseled about the disease and possible precipitating factors. Screening of family members could not be done due to financial constraints.

Discussion

IV is the most common disorder of keratinization with the incidence of 1 in 300 live births, inherited as AD pattern. It is caused by mutation in filaggrin gene located on chromosome 1q21. Presentation is usually in the 1st year of life.

AIP is an AD disease with gene mutation on chromosome 11q23.3 having variable penetrance. It remains undiagnosed in the first decade of life due to poor clinical suspicion and vague symptoms. Acute attacks are precipitated by various environmental or hormonal factors such as steroids, porphyrinogenic drugs, low-calorie intake, infections, and alcohol ingestion. The precipitating factor in the present case was prolonged fasting in Ramadan.

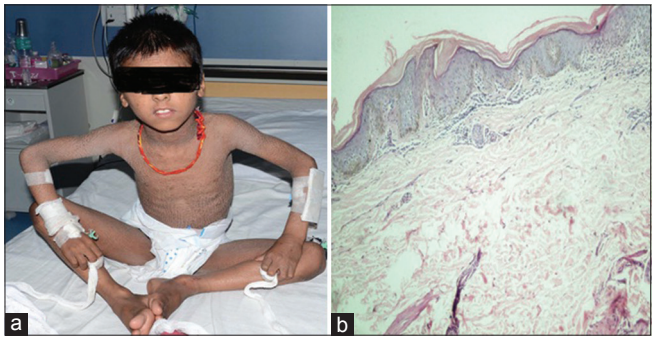

Figure 1: (a) Patient with dry, scaly skin seen all over the body. (b) Skin biopsy showing orthokeratosis, diminished granular layer with mild perivascular lymphocytic infiltrate in superficial dermis

AIP is rare before puberty and more common in women and postpubertal males as various reproductive hormones play dominant role in the precipitation of acute attacks.[4,5] A recently published case series of 36 patients from China also reported the higher mean age at the time of diagnosis.[6]

AIP attacks typically produce severe acute abdominal pain, neuropsychiatric symptoms, and autonomic involvement.[7] Bolia *et al.*[8] and Barclay[9] reported AIP in young males with similar presentation as this case. Drug of choice is hematin, but in its absence, 10% dextrose followed by high carbohydrate diet when the child can accept orally is required along with symptomatic therapy. AIP-induced seizures should be treated by clonazepam as phenytoin, phenobarbitone, and valproic acid are unsafe and can worsen a porphyric attack.[7]

Diagnosis of AIP should be considered in a child presenting with abdominal pain, seizures, parasthesias, hypertension, and hyponatremia along with reddish urine despite its rarity in the first decade.

This case is reported for rare occurrence of AIP in prepubertal male and its association with IV, as no case has been reported till date. Although we did not find any genetic association of coexistence of these two genetic diseases, it may be because of consanguinity.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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