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Title: Heroin withdrawal leading to metabolic alkalosis in a boy with cystic fibrosis. Short report

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Abstract:

Short report

We report on the first case of heroin withdrawal leading to metabolic alkalosis and the diagnosis of CF in a two month old boy.

A two month old boy presented with lethargy after breastfeeding. There was no history of vomiting or diarrhoea. There was no heat wave at that time (average temperature 17.1 ° C). He had a history of poor drinking and irritability. The parents were healthy and unrelated. He was born after an uncomplicated pregnancy and received phototherapy in the neonatal period for an indirect hyperbilirubinemia.

His weight on admission was 4.4 kilo (p 25) for a height of 55.5 cm (p 25-50). He was irritable with a high-pitched cry and normal consciousness. He developed hypertonia, opisthotonus and an increased respiration and heart rate.

The blood results revealed a severe metabolic alkalosis (pH = 7.54; Bicarbonate = 60.7 mmol/L), a hyponatremia (Na = 125 mmol/L), hypochloremia (Cl = 57 mmol/L) and hypokaliemia (2 mmol/L).

After repeated anamnesis parents mentioned heroin use two days before admission. During pregnancy the mother used only marihuana but no hard drugs. This was the first episode of heroin use since the delivery according to the mother.

Toxicological screening showed the presence of opiates in the stomach content and blood of the baby as well as in the breast milk and urine of the mother. The baby was started on methadone for the narcotic withdrawal syndrome.

A few days after admission the baby developed respiratory symptoms. The chest radiography revealed bilateral infiltrations. This together with the initial metabolic alkalosis pointed towards cystic fibrosis. This was confirmed with 2 positive sweat tests (sweat chloride was 78 and 83 mmol/L) and genetic analysis (deltaF508/R334W). He is pancreatic sufficient (faecal elastase-1 = 475).

Discussion

Vomiting and excessive sweating leading to severe metabolic alkalosis can be the presenting symptom of cystic fibrosis (CF) [1,2,3]. High environmental temperature is the classical provoking factor of this problem in CF.

The dysfunctional cystic fibrosis transmembrane regulator (CFTR) is a chloride channel, responsible for excessive chloride and sodium losses in sweat [4]. This induces an activation of the rennin-angiotensin system resulting in the stimulation of the sodium-cation exchange (sodium-hydrogen & sodium-potassium). This leads to hypokalemia and accentuates the alkalosis [4]. The clinical picture is classically a combination of metabolic alkalosis, hyponatraemia, hypochloraemia and warm weather often with feeding problems [1].

However since the average temperature in the period of admission was only 17°C this could not be the explanation of the problem seen in this boy.

Withdrawal symptoms in infants are agitation, irritability, inconsolability, crying, tremors, high heart rate, fidgets, high blood pressure, less sleep and sweating [5,6]. Sweating as a sign associated with narcotic withdrawal is seen in 94% of the patients [5]. In neonates is found that the withdrawal syndrome leads to hyperactivity of the sweating centres, with exaggerated glandular reactivity and excessive generalized sweating [6].

The excessive sweating as result the heroin withdrawal is the only logical explanation for the metabolic alkalosis in this boy with CF.

Cystic fibrosis should therefore be included in the differential diagnosis of any unexplained metabolic alkalosis even when environmental temperature is low.

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