Reminder of important clinical lesson

A Moroccan woman with severe electrolyte disorder

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Summary

The case of a Moroccan woman, age 25, who came into the emergency department with clinical tetany, is presented. She had experienced muscle spasms and paresthaesia of the upper limb over the previous few days. She had also experienced major diarrhoea for the previous 3 weeks. Investigations revealed a severe electrolyte disorder.

BACKGROUND

Electrolyte disorders are often encountered in hospitals and ambulatory care. However, they are often difficult to manage due to the numerous potential causes. Moreover, the presentation is variable and the complete clinical picture is rarely observed. We present a case of tetany caused by multiple circumstances.

CASE PRESENTATION

A Muslim Moroccan woman, age 25, presented to the emergency department with her husband, a doctor, with muscle spasms and paresthaesia of the upper limb that had persisted over the previous few days. She had also had major diarrhoea for the previous 3 weeks.

The patient, who wore a veil, had given birth a few weeks prior by caesarean section and was still breast feeding. After her pregnancy, she had severe iron deficiency and anaemia that had required several iron injections. In the differential diagnosis, celiac disease was suspected and serological tests gave positive results. A jejunal biopsy was planned to confirm the diagnosis after she terminated breast feeding.

The patient presented with hypotension; her skin was pale and dry, and her eyelids fasciculated. Her forearm, wrist and fingers were flexed and returned to this position after they were manually straightened. The neurological exam showed absent tendon reflex and positive Trousseau (figures 1–3) and Chvostek signs.

INVESTIGATIONS

A laboratory evaluation showed important electrolytic alterations: the patient had severe hypocalcaemia (corrected Ca: 1.41 mmol/litre), severe hypomagnesaemia (total Mg: 0.33 mmol/litre) and severe hypokalaemia (K: 2.4 mmol/litre). Her thromboplastin (TP) time was significantly low (TP: 31%) (normal values for our laboratory: corrected calcium (2.1–2.5 mmol/litre), total magnesium (0.6–1 mmol/litre), potassium (3.5–4.6 mmol/litre), phosphate (0.8–1.4 mmol/litre), thromboplastin time (85% to 125%), 25-OH vitamin D3 (8.4–52.3 µg/litre), parathormone (10–70 ng/litre)). The patient's phosphate level was normal (1.15 mmol/litre). Further investigations showed low

Figure 1 Trousseau sign. A carpopedal spasm occurred a few minutes after inflation of a sphygmomanometer cuff above systolic blood pressure. Occlusion of the brachial artery caused flexion of the wrist and metacarpophalangeal joints, hyperextension of the fingers and flexion of the thumb on the palm, producing the characteristic 'main d'accoucheur' posture. Frank L. Urbano, MD

25-OH vitamin D3 (7.9 µg/litre) and normal parathormone (60 ng/litre) levels. No bacteria were detected in the stool. An electrocardiogram (ECG) showed a slightly elevated QT interval (0.48 s).

OUTCOME AND FOLLOW-UP

The patient was hospitalised for further management of electrolyte disorders. The diagnosis of celiac sprue was supported by the intestinal biopsy (figure 4). The tetany resolved after intravenous electrolyte replacement. The patient was able to return home after 4 days of hospitalisation and oral electrolyte supplementation was prescribed. A gluten-free regime was introduced.

DISCUSSION

This case is of interest in understanding the cause of hypocalcaemia that led to the presenting tetany.

Figure 2 Characteristic hand posture called 'main d'accoucheur' (literal translation: the obstetrician hands posture).

Figure 3 Keep in touch. The spontaneous finger posture enables the patient to hold her mobile phone.

First, we note that hypomagnesaemia with secondary hypocalcaemia is a rare condition, most often seen in children.¹ Mild hypomagnesaemia induces a resistance to parathormone action, but severe hypomagnesaemia leads to reduced secretion of parathormone. We also note that severe hypermagnesaemia has an important effect on calcium homeostasis due to the suppression of parathormone secretion. In this case, hypomagnesaemia was due to reduced intestinal absorption and was exacerbated by major diarrhoea that occurred during the 3 weeks prior to hospitalisation.

Vitamin D is also important in calcium homeostasis. There are many conditions that can lead to reduced vitamin D² and secondary hypocalcaemia (scheme 1). In this case, we noted reduced intestinal absorption due to celiac disease. But it's also important to keep in mind that hypovitaminosis D may also be due to a lack of exposure to sunshine^{3 4}; this was certainly the case with our patient, who, as a Muslim, always wore a veil outdoors. Finally, we point out that during breast feeding there is an increased vitamin D requirement.^{3 5}

Figure 4 An intestinal biopsy confirmed the diagnosis of celiac disease. Subtotal villous atrophy with striking enlargement of crypts. The number of inflammatory cells was significantly elevated in the chorion: numerous lymphocytes and plasmacytes can be observed, with some polynuclear neutrophils and eosinophils.

There are many conditions that could lead to hypocalcaemia (scheme 1). There may be an increased loss of calcium, as in the case of pancreatitis or osteoblastic bone metastases; it can be the result of a reduction in intake, as in acquired hypoparathyroidism (acquired during surgery, radiotherapy or multiple endocrine neoplasia); or it may be secondary to high dose bisphosphonate treatment.

Celiac disease is most often diagnosed in young children. It is recognised in all ethnic groups with a worldwide prevalence of 1% to 2%.⁶ The classic symptoms are diarrhoea, anorexia, abdominal pain, weight loss and a failure to thrive. In adults, there are two modes of presentation⁷: the classic mode, with diarrhoea, abdominal pain and weight loss; and the silent mode, with no symptoms and an atypical presentation (ie, ferriprive anaemia or reduced bone density). Celiac disease rarely presents with a crisis of tetany.⁸⁻¹⁰ In our case, the diarrhoea accompanying this tetany was suggestive of celiac disease.¹¹

Learning points

- ▶ Hypomagnesaemia and hypermagnesaemia can lead to hypocalcaemia. The calcium levels cannot be corrected until magnesium has reached a standard level.
- ▶ Women who wear veils are at risk for developing hypovitaminosis D.
- ▶ Tetany is a rare presenting symptom of celiac disease.
- ▶ The association of major diarrhoea and tetany is suggestive of celiac disease.

Acknowledgement We thank the Institute of Pathology of the University Hospital of Lausanne for its collaboration.

Competing interests None.

Patient consent Patient/guardian consent was obtained for publication.

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Pedrazzini B, Favrat B, Lehr H-A, Bodenmann P. A Moroccan woman with severe electrolyte disorder. *BMJ Case Reports* 2010;10.1136/bcr.08.2009.2188, date of publication

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