Unusual presentation of more common disease/injury

Sjogren's syndrome with distal renal tubular acidosis presenting as hypokalaemic paralysis

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Summary

A young lady with a history of repeated episodes of generalised weakness and fatigue presented to our hospital with similar symptoms and was found to have severe hypokalaemia. She had been previously diagnosed as hypokalaemic periodic paralysis but during this presentation she had also started complaining of the classic sicca-complex of Sjogren's syndrome, which was not present previously. On subsequent investigations she was found to have normal anion-gap metabolic acidosis with positive urine anion gap consistent with the diagnosis of distal renal tubular acidosis (RTA). It was thus concluded that the distal RTA secondary to Sjogren's syndrome was the cause of severe hypokalaemia in our patient. By presenting this case we aim to not only highlight one of the rare presentations of Sjogren's syndrome but also the favourable response of our patient to potassium replacement alone.

BACKGROUND

Sjogren's syndrome has been associated with numerous extraglandular manifestations and could have varied presentations based on the sequence of occurrence of these symptoms. The purpose of this case is to highlight one of the under-reported presentations of Sjogren's syndrome that could easily be missed without the sicca symptoms. Distal renal tubular acidosis (RTA) secondary to Sjogren's syndrome as a cause of hypokalaemic paralysis has not been emphasised enough to be widely known in clinical practice. Moreover, the case reports in the literature describe single presentation of severe hypokalaemic paralysis which was later confirmed as Sjogren's syndrome, but a case presenting with repeated episodes of non-specific weakness reminiscent of congenital hypokalaemic periodic paralysis is truly rare.

CASE PRESENTATION

A 23-year-old lady presented to our hospital with chief complaints of generalised weakness, paresis and fatigue since 4 days. She had also developed polyuria, nocturia, burning micturition, nausea and vomiting for 2 weeks and fever for 7 days. During the review of systems, she also revealed complaints of itching of skin, dryness of eyes, increased thirst and problems with dental hygiene, which were not present previously. Her medical history was positive for repeated hospital admissions following episodes of weakness and fatigue for the past 4 years. She had been previously diagnosed as hypokalaemic periodic paralysis because of constant association of such episodes with mild hypokalaemia and her favourable response to potassium alone. Her last episode was a year back and was apparently unprovoked with no other significant laboratory abnormality that could point towards a cause. She had no family history of similar symptoms.

On examination, muscle strength was 3/5 in the upper limbs and 4/5 in the lower limbs. Deep-tendon reflexes

were 2+ in both upper and lower limbs, no sensory deficit was found and the Babinski's test was negative. Xerosis of eyes and mouth and dental caries were noted. Schirmer test showed positive results (<10 mm of wetting in 5 min). The rest of the physical examination was unremarkable.

INVESTIGATIONS

Laboratory investigations at the time of presentation showed: sodium 134 mEq/l (normal 135–145 mEq/l), potassium 2 mEq/l (normal 3.5–5.5 mEq/l), magnesium 1.4 mg/dl (normal 1.8–2.4 mg/dl) and normal calcium and chloride levels. Serum anion gap was calculated as 10 (normal 3–11). Blood gas investigations showed acidosis (pH=7.34), pCO₂ of 26.8 mm Hg (normal 35–45 mm Hg), pO₂ of 116.1 mm Hg and bicarbonate of 14.1 mEq/l (normal 22–26 mEq/l). The picture was consistent with metabolic acidosis with respiratory compensation. Urinalysis showed urine pH of 6.5, potassium of >150 mEq/24h (normal 25–100 mEq/24 h) and positive urine anion gap. The patient had elevated liver function test with SGOT of 373 IU/l (normal 6–34 IU/l), SGPT of 169 IU/l (normal 5–38 IU/l) and normal bilirubin levels. Renal function tests were normal.

Her autoantibody screen was reported as follows: serum SS-A(Ro) levels of 191.7 RU/ml (normal <20 RU/ml), SS-B(La) levels of >200 RU/ml (normal <20 RU/ml) and positive antinuclear antibody. The test report was strongly suggestive of Sjogren's syndrome. All other antibody tests were negative. Viral hepatitis titres were negative for hepatitis B and hepatitis C, thyroid function test was normal.

ECG showed bradycardia with T wave inversion, evidence of 'U waves' and slight prolongation of the QRS complex (figure 1). Kidney biopsy was not performed in our case.

Figure 1 ECG of the patient showing T wave inversion, evidence of U waves (green arrow) and slight prolongation of the QRS complex.

DIFFERENTIAL DIAGNOSIS

The finding of mild hypokalaemia coincident with each episode of weakness and the favourable response to potassium replacement alone, ruled out any psychiatric causes like conversion disorder, in our patient with no psychiatric history.

The finding of excessive loss of potassium in the urine in the setting of normal anion gap metabolic acidosis pointed towards a diagnosis of distal RTA. The presentation of sicca symptoms helped us establish a cause–effect relationship between Sjogren’s syndrome and hypokalaemia.

TREATMENT

The patient was subsequently admitted in the hospital for further workup and treatment. She was initially started on potassium chloride and magnesium sulphate intravenously along with antibiotics for urinary tract infection. Dental consultation was taken for dental caries. After discharge, she has been maintained on supportive treatment with oral potassium and bicarbonate supplements, artificial tear drops and lifestyle modifications like proper dental hygiene.

OUTCOME AND FOLLOW-UP

She has been symptom free for the past 1.5 years and repeat potassium levels during recent follow-up were within normal limits. Renal function tests have been normal.

DISCUSSION

Sjogren’s syndrome is a systemic autoimmune disorder characterised by a unique set of signs and symptoms predominantly caused by a cell-mediated autoimmunity against exocrine glands. Extraglandular manifestations of the disease arise from a similar pathogenetic mechanism affecting the kidneys, liver, lungs, pancreas and the nervous system. Renal involvement in Sjogren’s syndrome has been known for a long time and has become one of the most commonly encountered extraglandular manifestation.¹ A study conducted by Ren *et al*² on 130 patients with primary Sjogren’s syndrome concluded that distal RTA was present in as many as 70% of the patients studied.

Distal RTA is characterised by an inability of the kidneys to excrete hydrogen ions in the urine in a setting of metabolic acidosis resulting in inappropriately normal or alkaline urine. The condition can be diagnosed by normal anion-gap metabolic acidosis and positive urine anion gap. Renal potassium wasting leads to hypokalaemia. Although distal RTA is very common in Sjogren’s syndrome, it is usually asymptomatic and goes undetected in most cases.³

Our patient was initially labelled as congenital hypokalaemic periodic paralysis because of repeated episodes of mild hypokalaemia without any discernible cause. We believe the diagnosis of distal RTA was missed previously because of much milder nature of her symptoms, prompt response to potassium alone and near-normal laboratory results otherwise. During the latest presentation, she also revealed recent onset of dry eyes, excessive thirst and poor oral hygiene which raised the issue of possible Sjogren’s syndrome. The other difference between the recent and previous presentations was the presence of severe hypokalaemia, significant urinary potassium loss and normal anion-gap acidosis. The concomitant urinary tract infection in our patient may have played a role in exacerbating the symptoms by increasing the urinary potassium loss precipitating severe hypokalaemia.⁴

Hypokalaemic paralysis in association with Sjogren’s syndrome is rare and only occasionally is it the sole major manifestation that brings a patient to the doctor. Moreover, the cases reported in the literature recently, describe a single presentation of severe hypokalaemic paralysis which was later confirmed as Sjogren’s syndrome^{3–6} but a case presenting with repeated episodes of non-specific weakness reminiscent of congenital hypokalaemic periodic paralysis or a psychiatric disorder, is truly rare. Although distal RTA due to Sjogren’s syndrome has not been included in the differential diagnosis of hypokalaemic paralysis, it is necessary to be guarded of the possibility. Sudden hypokalaemia is a very serious complication of distal RTA with severe, even fatal consequences.⁴

Elevated liver function test, as seen in our patient, is another common finding in primary Sjogren’s syndrome with other extraglandular manifestations.⁷ Although no other explanation may be found in most cases and the finding may have a benign course, the significance of this

finding is to highlight the need to further investigate for any underlying cause of liver damage such as viral antibody titres and autoantibody screen.

Combination of corticosteroids and other immunosuppressants have been reported to slow progression of renal damage in Sjögren's syndrome^{2 8} but the efficacy of the treatment has been largely demonstrated only in patients with rapidly progressing renal damage or insufficiency.^{2 8 9} In fact, in a case reported by Reddy *et al*¹⁰, hypokalaemia and acidosis recurred after tapering the dose of prednisolone, having given it for 6 months. They concluded that a 6-month course of prednisolone may be ineffective in correcting the condition.

As curative therapy for such cases with Sjögren's syndrome continues to elude, symptomatic treatment remains the mainstay for these patients. Potassium replacement in our patient showed considerable improvement in the symptoms and she has now been maintained on oral potassium and bicarbonate supplements. The need for continued follow-up of renal function tests in order to look out for any deterioration could not be overemphasised.

Learning points

- ▶ Sjögren's syndrome is a common cause of distal renal tubular acidosis and can result in severe, even life-threatening hypokalaemia occasionally.
- ▶ Episodic hypokalaemic paralysis can sometimes be the initial presentation of Sjögren's syndrome, even before the occurrence of the sicca-complex. This association continues to be underdiagnosed and missed in clinical practice because it has not been emphasised enough.
- ▶ Hypokalaemic paralysis in Sjögren's syndrome responds very well to potassium supplements alone but frequent monitoring of renal function is necessary.

- ▶ More research is necessary to find the right combination of drugs for curative therapy in such cases.
- ▶ Elevated liver enzymes are another common manifestation of Sjögren's syndrome and may be a completely benign finding. Nevertheless, a search must be made for causes like chronic hepatitis C and autoimmune hepatitis that could benefit from treatment.

Competing interests None.

Patient consent Obtained.

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