Case Report with Review of Literature

# Hypokalemic paralysis as a presenting manifestation of primary Sjögren's syndrome: A report of two cases

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## ABSTRACT

Primary Sjögren's syndrome (pSS) is a chronic autoimmune disease characterized by a progressive lymphocytic infiltration of the exocrine glands with varying degrees of systemic involvement. Overt or latent renal tubular acidosis (RTA), caused by tubulointerstitial nephropathy, is a common extraglandular manifestation of pSS. Hypokalemic paralysis is a well known, albeit rare complication of severe distal RTA from any cause. Cases of pSS manifesting for the first time as hypokalemic paralysis caused by distal RTA have been rarely reported. We herein present our experience of two cases, who presented to us for evaluation of hypokalemic paralysis and on work up found evidence of distal RTA, which on further work up found to be secondary to pSS. A high index of suspicion for pSS should be kept in all patients with hypokalemic paralysis.

**Key words:** Hypokalemic paralysis, interstitial nephritis, renal tubular acidosis, Sjögren's syndrome

## Introduction

Sjögren's syndrome is a slowly progressing autoimmune disease characterized by lymphocytic infiltration of the exocrine glands, mainly the lacrimal and salivary glands, resulting in impaired secretory function. Simultaneously, systemic features of cutaneous, respiratory, renal, hepatic, neurologic, and vascular nature often occur.[1] The syndrome can present either alone (as primary Sjögren's syndrome) or in the context of underlying connective tissue disease (as secondary Sjögren's syndrome).[2] Renal involvement is well-recognized extra glandular manifestation of primary Sjögren's syndrome (pSS). Most common manifestations are related to tubular dysfunction resulting from chronic interstitial nephritis and can manifest as distal renal tubular acidosis (RTA), proximal RTA, tubular proteinuria, and nephrogenic diabetes insipidus.[3,4] Hypokalemic paralysis rarely occurs as the first manifestation of a renal tubule disorder due to pSS. We herein present two cases who presented to us with hypokalemic paralysis, secondary to pSS.

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## Case Reports

### Case 1

A 19-year-old unmarried lady presented to our hospital for evaluation of two episodes of generalized weakness. First episode occurred 4 years back, while second episode occurred 2 months back. Both the episodes were acute in onset, with weakness of all four limbs and neck muscles, and occurred during recovery from febrile illness. There was no sensory, bladder, or bowel involvement during these episodes. She was found to have hypokalemia (documented serum $K^+$ of 1.9 and 2.2 meq/L; normal range 3.5–5.5 meq/L) on both the occasions and complete

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recovery occurred in a span of 48 h on receiving intravenous and oral potassium. She was prescribed oral potassium supplementation. She was referred to endocrinology department for evaluation of hypokalemia. There was no history of fever, joint pain, skin rash, photosensitivity, or parotid swelling. There is no family history of a similar illness. At presentation to us, she had normal general physical and neurological examination. Investigations are summarized in Table 1.

A diagnosis of distal RTA was made in view of an alkaline urinary pH (>5.5) in the setting of metabolic acidosis. There was no evidence of any proximal tubular dysfunction. She was evaluated for etiology of distal RTA, which revealed positive rheumatoid factor (RF) and antinuclear antibody (ANA), while serum C3 level was normal and anti-dsDNA was negative. Schirmer's test was positive in both eyes and her serum anti-Ro and anti-La antibody levels were unequivocally elevated. The buccal mucosal biopsy was consistent with Sjögren's syndrome. She was discharged on oral potassium and alkali supplementation.

### Case 2

A 22-year-old married lady presented for evaluation of an episode of acute onset flaccid quadriparesis without any sensory, bladder, or bowel involvement. The episode occurred 15 days before she presented to us. At the time of episode, she was found to have low serum potassium of 1.9 meq/L. She improved within 48 h after receiving potassium supplementation. She had been taking oral potassium supplementation regularly since then and did not develop any further episodes of weakness. There was no history of fever, joint pain, skin rash, photosensitivity, or parotid swelling. There is no family history of a similar illness. Her general and systemic examination including neurological examination was normal. Investigations are summarized in Table 1.

A diagnosis of distal RTA was made. Bicarbonate loading test ruled out an associated proximal tubular dysfunction. On working up for the etiology of distal RTA, she was found to have elevated titer of RF and ANA, her serum C3 level was normal, and anti-dsDNA was negative.

**Table 1: Laboratory parameter of patients**

| Lab parameter | Patient 1 | Patient 2 |
|---|---|---|
| Hemoglobin (g/dL) | 11.6 | 11.2 |
| Serum calcium (8.1–10.4 mg/dL) | 9.1 | 8.8 |
| Serum phosphate (2.5–4.5 mg/dL) | 3.2 | 3.9 |
| Serum alkaline phosphatase (80–240 IU/L) | 434 | 285 |
| Serum total protein/albumin/globulin (g/dL) | 9.8/3.9/5.9 | 10.7/3.5/7.2 |
| Serum urea/creatinine (mg/dL) | 23/1.1 | 30/1.3 |
| Serum Na/K (meq/L) | 140/2.9 | 143/2.8 |
| Serum intact PTH (15–65 pg/ml) | 28.23 | 21.3 |
| Serum 25 (OH) vitamin D (ng/ml) | 6.5 | Not available |
| Arterial pH | 7.23 | 7.21 |
| Serum $HCO_3$ (meq/L) | 6.3 | 10.4 |
| Arterial $PO_2/PCO_2$ (mmHg) | 100.4/15.3 | 98.4/25.3 |
| Urine pH | 6.22 | 7.15 |
| Fractional excretion of bicarbonate (FE $HCO_3^-$) | 3.2% | 2.9% |
| Glucosuria | No | No |
| Albuminuria | No | No |
| Urine aminoacidogram | Negative | Negative |
| Urine 24 h calcium (1.5–4 mg/kg body weight) | 432 mg (weight 39 kg) | 139 mg (weight 45 kg) |
| TmP GFR (2.5–4.5 mg/dL) | 2.9 | 3.8 |
| USG abdomen/abdominal radiograph | No nephrocalcinosis | No nephrocalcinosis |
| Antinuclear antibody/rheumatoid factor | Positive/positive | Positive/positive |
| Anti-Ro/Anti-La | Strongly positive | Not done |
| Schirmer's at 5 minute (right/left eye, positive if ≤ 5 mm) | 3 mm/3 mm | 2 mm/4 mm |
| Lip biopsy | S/o Sjögren's | S/o Sjögren's |
| HIV and Hepatitis C serology | Non reactive | Non reactive |
| Serum total T4 (5.1–14.1 μg/dl) | 8.6 | 7.24 |
| Serum thyroid stimulating hormone (TSH; 0.27–4.2 μIU/ml) | 1.3 | 2.37 |

Schirmer's test was positive in both eyes. The mucosal biopsy from lower lip was consistent with Sjögren's syndrome.

## Discussion

pSS is a disease of exocrine glands presenting with manifestations related to dry eyes and dry mouth. Nonexocrine organ systems may also be involved, including skin, lung, gastrointestinal tract, central and peripheral nervous system, muscular skeletal apparatus, and the kidney.[1,5] The reported rate of renal involvement in pSS in literature is variable ranging from 4.2% to 50%.[4] The spectrum of renal disease includes interstitial nephritis, which can manifest as distal RTA, proximal RTA, tubular proteinuria, nephrogenic diabetes insipidus, glomerular diseases, or renal failure.[3,4] The most common manifestations are related to tubular dysfunction which results from chronic interstitial nephritis.[3] Hypokalemia is the most common electrolyte abnormality in patients with dRTA. The mechanisms of distal RTA-induced hypokalemia include decreased distal tubular Na delivery, secondary hyperaldosteronism, defective H-K ATPase, and bicarbonaturia.[6]

Although hypokalemia is frequent sequel of RTA, a severe symptomatic decrease in serum potassium concentration has been described in a few cases only. Hypokalemic paralysis is a rarely encountered complication of RTA secondary to pSS. Only 18 cases were described between 1966 and 2004.[7] Subsequently, approximately 25 more cases has been reported.[8-21] Here, we present a report of two cases that presented to us with hypokalemic paralysis secondary to distal RTA, which on further work up, was found secondary to pSS. Both of our patients did not have any evidence of proximal tubular dysfunction. In conclusion, the kidney involvement in pSS can uncommonly present as hypokalemic paralysis in the absence of significant sicca symptoms or may precede sicca symptoms. Sjögren's syndrome should be instigated in any patient presenting with hypokalemic paralysis from RTA, even in the absence of the sicca syndrome.

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