

Case Report

A case of quadriparesis due to renal tubular acidosis accompanied by vitamin D deficiency in Sjögren's syndrome

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ABSTRACT

Renal tubular acidosis (RTA) is metabolic acidosis disorder with a normal anion gap that occurs resulting from bicarbonate reabsorption or disorder in the hydrogen excretion from the kidney. A variety of tests are required to be administered in a stepwise fashion for the diagnosis and characterization of RTA. Correct diagnosis involves careful evaluation, including exclusion of other entities causing acidosis. The patients were treated with potassium and bicarbonate supplementation. A fifty-one years old female patient presented to the emergency department with quadriparesis dependent on hypokalemia and vitamin D deficiency, was diagnosed with distal renal tubular acidosis (dRTA) combined with Sjögren's Syndrome (SS). We submitted this case in order to draw attention to the presentation of the RTA with SS.

Keywords: Sjögren's syndrome, Renal tubular acidosis, Hypokalemia

INTRODUCTION

Renal tubular acidosis is a tubular function disorder which causes failure in bicarbonate reabsorption or excretion of hydrogen ions in the kidneys which is independent from the glomerular filtration rate. Hyperchloremic is a clinical syndrome characterized by metabolic acidosis and impaired urinary acidification¹. Distal renal tubular acidosis (dRTA), renal excretion of hydrogen ions from the defect, acidification of the urine in the distal tubule of the kidney is the result of the disorder. Here, despite of hyperchloraemic metabolic acidosis urine pH cannot be reduced below 5.5. Because excretion of intense bicarbonate is present in the urin. In patients presenting to the emergency department with quadriparesis, normal anion gap metabolic acidosis and hypokalemia were detected. The patient was diasnosed with dRTA. When we investigated the etiology, patient who had positive antinuclear antibody (ANA), Anti-

Sjögren's-syndrome-related antigen A (anti-SSA) and anti-Sjögren syndrome B antigen (anti-SSB) was diagnosed with Sjögren's syndrome as well. Response was well to treatment owing to intravenous potassium and oral sodium bicarbonate administration.

CASE REPORT

A fifty-one years old female patient came to our clinic with complaints of acute fatigue, loss of strength in all extremities, dry mouth. It was learned that she had dryness of mouth and eyes for several years. On physical examination, blood pressure was 120/60 mmHg, body temperature 36.8°C was measured bradycardia and weakness in all extremities, 5.3 power loss was detected. In electrocardiogram, sinus bradycardia was found (48 beats/min). In laboratory tests, leukocyte count 7.3 mm³/L, hemoglobin 12.6 g/dl (12-16), platelet count 222,000 /mm³ (150,000-450,000), potassium 1.85 mEq/L

(3.5-5.5), sodium 136 mEq/L (136-145), chloride 108 mEq/L (98-107), glucose 119 mg/dL (106-125), blood urea nitrogen was 16 mg/dL (6-20), serum creatinine 0.8 mg/dL (0.5- 0.9), parathyroid hormone 25 pg/ml (10-65), 25 (OH) vitamin D 14.1 ng/ml (normally >30), calcium 9,6 mg/dl (8.4-10.2), phosphorous 3.3 mg/dL (2.5-4.5), liver enzymes and muscle enzymes were with in normal limits. In blood gas analysis, metabolic acidosis with normal anion gap (pH: 7.2, PCO₂: 33, HCO₃: 15) were detected. Serum anion gap (sodium-(chloride+bicarbonate) was found to be +9 (normal <12). Urinalysis urine pH 7.5 and its density 1007, random urinary sodium, potassium and chloride was 40 mEq/L, 43 mEq/L and 39 mEq/L, respectively urinary anion gap (sodium +potassium-chloride) was high (+44). In 24 hour urinary, 400 mg proteinuria was found. The patient had hypercalciuria as calcium excretion was 329, 8 mg/day (normal range 100-250 mg/day). The patient was diagnosed with RTA which was ascertained by other positive evidence for the impaired urinary acidification of distal tubules by loop diuretic (furasemide) test (urine pH >6,5) and oral and intravenous potassium and sodium bicarbonate were started. On the third day of treatment the patient's loss of power had totally disappeared.



Figure 1: In the minor salivary gland biopsy, commonly chronic lymphoplasmacytic inflammation, which occurred fibrosis by damaging parenchymal acini and duct structures in the stroma, is observed. Histopathologic findings which were Chisholm score 4 in the salivary glands was compatible with Sjögren's syndrome (he; x200).

When the RTA etiology was investigated; the viral markers were negative, rheumatoid factor (RF), ANA, anti-SSA, anti-SSB, Ro 52 positive, other autoantibodies were negative and complement those normal. Thyroid hormones were normal. In the renal ultrasonography stones was not detected. Tear Test-5 minutes in the Schirmer test was found to be 4 mm. Result of biopsy made from in or salivary gland were reported as Chisholm score of 4 (Figure 1). The patient was diagnosed as having primary SS (pSS) with hypokalemia and dRTA.

The complaints of patient diagnosed hypokalemia quadriparesis and RTA due to SS passed after treatment. With the diagnosis of SS, hydroxy chloroquine tablets 200 mg was started. The patient is currently being

followed in our clinic and laboratory findings has remained within normal limits.

DISCUSSION

SS, which causes dry eye (keratoconjunctivitis sicca) and dry mouth (xerostomia), is a chronic autoimmune disease characterized by lymphocyte infiltration of exocrine glands. The disease occurs alone as primary, if it is accompanied with other connective tissue diseases, it is defined as secondary. In a study performed in Izmir in Turkey, according to the American-European classification criteria SS prevalence is of 0.16%, according to the classification criteria of the European it has been reported as 0.28%.² In SS, ANA positive rate changes range from 45% to 94% depending on used titre and working method.³ Ribonucleoprotein antigens formed against antibodies, so anti-SSA and anti-SSB positivity, is determined as 40-83% and 25-41% respectively. While these antibodies are found in mostly pSS and systemic lupus erythematosus (SLE), they are more rarely found in other connective tissue diseases.⁴ RF and other autoantibodies can be determined as rarely positive. In addition, in approximately 10-20% of patients, low complement levels are determined.³ In our case, RF, ANA, anti-SSA, anti-SSB, Ro 52 positive was determined and the complement was normal. Other autoimmune diseases were excluded.

Histopathological classification in the SS in 1968 was described by Chisholm and Mason. According to this classification, stage 0 negative, stage 1 mild, Stage 2 moderate lymphocytic infiltration absence of focus, Stage 3 is one of focus and stage 4 multiple foci are defined. In our case, we have identified as Chisholm score 4. dRTA is known as classic or type 1 RTA occurring due to damaged distal tubular H⁺ secretion. Accompanied by hypokalemia, in the presence of hyperchloremic normal anion gap metabolic acidosis, classical type dRTA should be suspected in diagnosis. In spite of metabolic acidosis urine pH cannot be down loaded under 5.⁵ Patients with dRTA display a positive urine anion gap and a normal plasma anion gap, distinguishing it from other types of acidosis, such as ketoacidosis, lactic acidosis and acidosis due to poisoning with solvents or drugs, with a higher plasma anion gap than normal. Hypokalemia is the most common electrolyte abnormality in patients with dRTA. The mechanisms of dRTA-induced hypokalemia include decreased distal tubular sodium delivery, secondary hyperaldosteronism defective H-ATP ase, and bicarbonaturia.

In our case, the normal anion metabolic acidosis, a positive urine anion gap were detected. Due to loss of calcium and phosphorus by the kidney, formation of nephrocalcinosis or nephrolithiasis are also signs that can be seen in Type 1 dRTA. Type I RTA can be idiopathic or hereditary, also is a heterogeneous disorder which can develop secondary to a variety of diseases. In sporadic cases, secondary type I RTA is associated with

the most common autoimmune diseases such as SS and SLE.

Renal tubular involvement and particularly RTA among extraglandular manifestations of SS occur in up to 25-30%. Renal findings in SS occurs as interstitial nephritis which is together with mainly the hipostenuria, dRTA and diabetes insipidus. In addition, that glomerular involvements such as focal segmental glomerulosclerosis, mesangioproliferative glomerulonephritis, minimal change disease, membranous nephropathy, membranoproliferative glomerulonephritis and cryoglobulinemia may develop has passed the literature. Of these, membranoproliferative glomerulonephritis and membranous nephropathy is the most common. Our case was not made renal biopsy.

Palker et al, 58-year-old patient who was detected positive quadriparesis, atrial fibrillation, hypokalemia, dRTA, ANA, anti-SSA and anti-SSB in was diagnosed with pSS.⁵ Naik et al in 35 year old female patient who presented with quadriparesis, also dryness of mouth and eyes was present. In the patient with hypokalemic, dRTA, ANA and anti-SSA and anti-SSB positivity and Schirmer's test positive, pSS was diagnosed.⁶ Selvaganesh et al, in 38 year-old female patient, quadriplegia, hypokalemia, hypophosphatemia, dRTA, mouth and eye dryness, ANA and anti-SSA and anti-SSB were positive and in the patients who Schirmer test was positive, SS was diagnosed.⁷ Our case complained with quadriparesis and dry mouth.

Reported that in a study, individuals with undifferentiated connective tissue disorders who progressed to rheumatoid arthritis (34.2%), SLE (17.1%), SS (17.1%), or mixed connective tissue disease (17.1%) had lower vitamin D levels than individuals who did not progress beyond the undifferentiated connective tissue disease stage.⁸ Hypokalemic paralysis and osteomalacia should be taken in to consideration in the diagnosis of SS with RTA. Abnormal vitamin D metabolism has rarely been reported in pSS patients. Liao and colleagues, in 49 year-old male patient, presented with dRTA, hypocalcemia, and hypophosphatemia that were found to be secondary to both vitamin D deficiency and pSS.⁹ Ati and friends have diagnosed with SS and osteomalacia in a 43 years old female patient who had hyperchloraemic metabolic acidosis, chronic renal disease, hypokalemia, hypophosphatemia, hypocalcemia and vitamin D deficiency. In the renal biopsy of case, diffuse and severe tubulo interstitial nephritis and intense lenfoplasmositik cell infiltration were detected.¹⁰

RTA and vitamin D deficiency were defined in autoimmune disease and in the Fanconi syndrome. Fanconi syndrome was excluded in this case due to the lack of aminoaciduria and glycosuria. In osteomalacia disease, it may be present with muscle weakness. In our case, there was a vitamin D deficiency, but osteomalacia (hypocalcemia and hypophosphatemi were absent) was

not detected. In addition, 400 mg/day proteinuria was present but renal biopsy was not done.

Twelve cases, who admitted with quadriparesis due to hypokalemia and were diagnosed with RTA and SS, have been found in Pubmed search. In addition, in some cases, vitamin D deficiency was identified and osteomalacia was diagnosed. In conclusion kidney involvement in pSS can uncommonly present as hypokalemic paralysis. As in some previously reported cases, hypokalemia led to the diagnosis of RTA and pSS. The reported case presented with symptoms of hypokalemic periodic paralysis and sicca symptoms for a long time, not severe enough to make her to seek medical care. Therefore, autoimmune disorders, especially SS, should be considered as a cause of dRTA. In patients with SS, urinalysis which is easy test the control evaluation in renal involvement, should be evaluated for each control and be done follow-up of vitamin D level.

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