Ross syndrome with chronic cough and RF positivity: a case report

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Abstract

Ross syndrome is a rare disorder of unknown etiology, characterized by the triad of segmental anhidrosis, tonic pupil, and areflexia/hyporeflexia. Ross syndrome is thought to be a limited and selective ganglioneuropathy. Its etiology has not been fully elucidated. Autonomic findings may also accompany. We wanted to present our 25-year-old patient who was diagnosed with Ross syndrome and presented with complaints of inability to sweat, heat intolerance, headache, diarrhea and chronic cough.

Keyword: cough, tonic pupil, anhidrosis, compensatory

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INTRODUCTION

Ross syndrome is a rare, degenerative, progressive, autonomic nervous system disorder. It is characterized by segmental anhidrosis, areflexia/hyporeflexia and tonic pupil (the pupil in one eye is mydriatic and the light reflex weak). Segmental hyperhidrosis is seen compensatory.

The symptom is anhidrosis that is very uncomfortable and the patients complain heat intolerance. It was first reported in 1958. There are more than eighty cases in the literature [1, 2]

CASE REPORT

A 25-year-old male patient applied to our polyclinic with complaints of inability to sweat, heat intolerance, headache, diarrhea, and chronic cough that started two years ago and progressed. He said that his symptoms are more common during exercise and in hot weather. He said that his symptoms were more often when he is doing exercise and in the hot weather. The patient was admitted to our neurology service for further examination and treatment. He had no known disease, medication, trauma, or history of febrile illness earlier. In his physical examination, his temperature was 36.6 °C, blood pressure was 110/70 mmHg while lying down, and 100/60 mmHg while standing up. Heart rate was 107/minute, respiration was 18/minute, and oxygen saturation was 96 %. In his neurological examination, he was conscious, oriented and cooperative. His pupils were anisochoric, the left pupil was normal but the right pupil was mydriatic, and the light reflex was more difficult. Eye movements were free in all directions (Figure 1). His speech was natural and there was no facial asymmetry. Also no deficit in the motor examination. Sensory examination was normal, cerebellar examination skillful. Deep tendon reflexes (DTR) were

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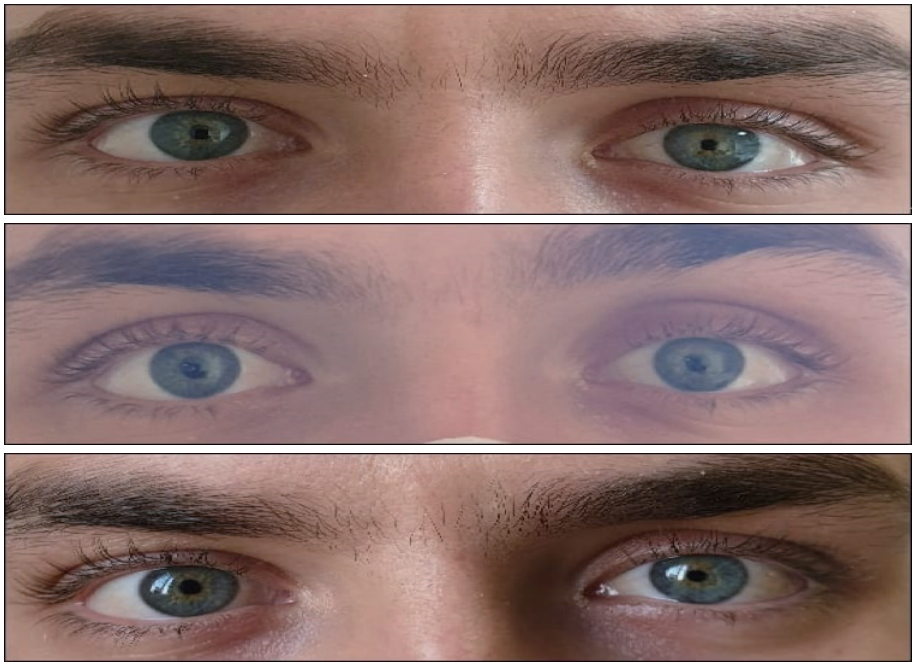

Figure 1. Adie's pupil (the pupil is mydriatic in one eye, and the light reflex is weak.)

absent in both the upper and lower extremities, and the plantar response was flexor. There was no sign of meningeal irritation.

All of the routine blood tests, biochemistry, whole blood, vitamin b12 tests, thyroid function tests, HbA1c, erythrocyte sedimentation rate, serum electrophoresis, autoantibody screening (Antinuclear Antibody, anti-SSA, anti-SSB), antithyroid antibodies, syphilis serology (fluorescent treponemal antibody), and Schirmer's test were normal. Rheumatoid factor was high (20 I/U) but there were no symptoms of rheumatoid arthritis. Elisa tests were negative (HIV, hepatitis B, hepatitis C, rubeola, rubella, hepatitis A). Complete urinalysis was within normal limits. No factor was found when viral meningitis factors investigated. Brucella tests came back negative. Serum acetylcholine receptor antibody was negative. Eccrine sweat gland biopsy result was normal, sweat gland nerve fiber density was normal. Sympathetic skin response test were conducted by electrical stimulation on the dorsum and plantar face of the right hand and foot. No sympathetic skin response obtained. The R-R interval showed abnormality in the heart rate variability analysis. The result was interpreted as parasympathetic system dysfunction. There was no pathology in the lung computed tomography (CT). Brain CT was normal. No pathological findings were found in brain magnetic resonance imaging (MRI) and cervical, thoracal, and lumbar MRI. Nerve conduction studies were normal in his electromyography (EMG). It was learned that the patient was examined in detail in the chest diseases outpatient clinic 5-6 months ago with the complaint of chronic cough. Also chest computed tomography, respiratory function tests, purified protein derivative (PPD) test, allergy panel, complete blood test were conducted at that time and all were normal and the reason for cough was not found. Ross syndrome was thought to be autoimmune since rheumatoid factor was positive in our case. The patient was given 1000 mg/day methylprednisolone therapy for five days, but there was no positive response to the treatment. He was discharged and recommended to be followed up by the neurology outpatient clinic.

DISCUSSION

Ross syndrome was defined by Alexander Ross in 1958. It is an autonomic nervous system dysfunction with segmental anhidrosis, tonic pupil, and areflexia/hyporeflexia. However the main objective symptom is

segmental hyperhidrosis that occurs as a compensator [1].

The classic triad as above usually develop within a few years. The first noticed symptom is heat intolerance due to segmental anhidrosis. Our patient also had the classical triad of Ross syndrome.

Other autonomic findings such as orthostatic hypotension, chronic cough, vasovagal syncope, headache, and irritable bowel syndrome may be occurred [2,3]. Our patient had a complaint of chronic cough and the cause could not be found as a result of previous examinations.

It is a rare but progressive disease. The exact pathogenesis is unknown. Although autonomic disorders affecting sudomotor and vasomotor functions are common, they are rarely symptomatic. Anhidrosis occurs due to the involvement of the sympathetic ganglion or postganglionic fibers. Areflexia/hyporeflexia is due to involvement of the dorsal root ganglia and degeneration of the fasciculus gracilis and cuneatus, or it has been suggested that there may be synaptic reduction between alpha motor neurons and spindle afferents. Because both the peripheral autonomic nervous system and the dorsal root ganglia develop from the neural crest, it is possible that they are prone to similar effects [4,5]

The cause of the tonic pupil is the damage to the parasympathetic cholinergic fibers between the iris and the ciliary ganglion. The tonic and slow response of the pupil to the adaptive stimulus is the most characteristic feature for diagnosis. Anisocoria is typical. It has been thought that chronic cough may occur as a result of efferent or afferent involvement of the vagus nerve or it may contribute to cough with the involvement of parasympathetic ganglia[4-6]. Although cases with ANA positivity are seen in the literature, it has been reported that there is no evidence of autoimmunity in Ross syndrome and that some autoantibodies such as ANA positivity can also be seen in healthy people at low titers[4,5]. Our patient was also positive for RF, but we had no other findings in terms of autoimmunity in its etiology and did not respond to the treatment given.

The prevalence of specific race, age, and gender for Ross syndrome could not be determined. However, when we look at the cases in the literature, the ratio of women to men is slightly higher. The average age of the cases is 36 [4-6].

Other syndromes showing partial autonomic dysfunction are;

- Harlequin syndrome (segmental anhidrosis)
- Holmes-Adie syndrome (tonic pupil+areflexia)
- Horner's syndrome (segmental anhidrosis+ptosis+miosis+enophthalmos [4-6].

Segmental anhidrosis can be observed in Shy Drager disease as well as with in multiple sclerosis, diabetes mellitus, leprosy and polyneuropathies. All three components of Ross syndrome were present in our case. However, he had chronic cough, diarrhea, orthostatic hypotension and headache. Rheumatoid factor (RF) was positive. When the literature was searched, there were cases with positive antinuclear antibodies that might suggest autoimmunity, but there were no other cases with RF positivity.

The patients presented in the literature that complained excessive sweating have had that as compensatory. Botulinum toxin, iontophoresis, propantheline bromide, clonazepam, and thoracic sympathectomy were applied to the patients for hyperhidrosis [4-8].

As result it can be said that the patients with complaints of inability to sweat and heat intolerance should be examined neurologically, ophthalmologically and dermatologically. Ross syndrome should be kept in mind in the cases with tonic pupil and areflexia. The need for a multidisciplinary approach was also emphasized in our case.

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