



Exophthalmos Myxedema Acropachy Syndrome: A Case Report

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Abstract

Exophthalmos, myxedema, and acropachy are collectively named Exophthalmos myxedema acropachy (EMA) syndrome, which is a rare syndrome associated with hypertrochardotrophia. Among patients with hyperthyreosis, EMA has an incidence less than 1%. Here, we reported a case of EMA and explored its diagnosis and treatment.

Keywords: Hyperthyreosis, Exophthalmos, Myxedema, Acropachy

Introduction

Exophthalmos myxedema acropachy syndrome (EMA) refers to the triads of exorbitism, myxedema, and acropachy (hypertrophic osteoarthropathy), which is a rare syndrome associated with hyperthyreosis (1). EMA is subject to an autoimmune disease, but its pathogenesis remains unknown (2). Among patients with hyperthyreosis, the incidence of concurrence with Graves' ophthalmopathy is 30%, that of concurrence with myxedema is approximately 4%, and that of concurrence with acropachy is 1%, whereas that of simultaneous concurrence with the three manifestations is much less than 1% (3). Males are more likely to suffer from EMA than females with a gender ratio of 3.4: 1 (4). To date, EMA has only been rarely reported. Due to a low incidence rate and rare available literatures, this condition is easily misdiagnosed as complications of hyperthyreosis, particularly by inexperienced physicians. Here, we reported a case of EMA. We further explored its diagnosis and treatment method.

Case report

A 56-year-old male patient was hospitalized on August 28, 2013 for heat fear, hyperhidrosis, car-

diopalmus, and tantrum for 10 years. Ten years before, for unknown causes, the patient presented with cardiopalmus, heat fear, hyperhidrosis, dysphoria and tantrum, acratia, insomnia and dreaminess, polyphagia, and an increased stool frequency but without an obvious decrease in body weight. These manifestations were concurrent with obvious exorbitism, photophobia, and lacrimation. The examination test in a local hospital showed increased 3,5,3'-triiodothyronine (T3) and 3,5,3',5'-tetraiodothyronine (T4), as well as decreased thyroid stimulating hormone (TSH). The patient was diagnosed with hyperthyreosis and given oral thiamazole tablets (10 mg, thrice per day). However, he did not take them regularly. Eight years before the hospitalization, the patient presented with nodule-alike anterior tibial pachyderma of both lower limbs accompanied by itching. He did not receive any treatment. Pachyderma at the lower 2/3 sites of both tibias aggravated gradually, showing circular hyperplasia and string-of-beads skin nodules. Six years before the hospitalization, he presented with finger end thickening of both hands but did not give much attention. One week before the hospitalization, the patient suffered from distending pains of both thighs and upper

arms, for which he visited doctors' office at the Affiliated Hospital of Zunyi Medical College. Examination showed T3 > 12.32 nmol/L, T4 > 387 nmol/L, TSH at 0.01 uIU/ml. He had a poor spirit, slight anorexia, poor sleep, and an increased stool frequency but without abnormalities in urination and the body weight. He had no history of chronic nephrosis, heart disease, pulmonary diseases, or anemia.

Admission tests showed a pulse rate of 77/min, a hyperthyroidism face, erubescence and moistening all over the body without yellow-stained and hemorrhagic spots in the skin and mucous membranes, no perceived systemic superficial lymphadenectasis, positive three tremor syndrome, obvious bisymmetrical exophthalmos (Figure 1a), conjunctival congestion of both eyes with non-yellow-stained sclera, isometrical round pupils with a diameter of approximately 4 mm, which were sensitive to light, upper eyelid retraction, blepharodistasis, positive Stellwag's, Von Graefe's, Joffroy's, and Mobius' signs, no distention of neck veins with a negative hepatojugular reflux sign, the trachea in the middle, and two degrees of bisymmetrically enlarged thyroids with soft texture and smooth surfaces but without pain, nodules, tremor, or vascular murmurs, which moved up and down with swallowing. His bilateral pulmonary respiration was clear without dry and moist rales. His heart was not enlarged with a heart rate of 77/min in regular rhythm and loud first heart sounds. No pathological noise was heard in each auscultatory valve area.

The patient had a soft and flat abdomen with subxiphoid tenderness rather than rebound tenderness and muscle tension. The livers and spleens were not palpable. He had obvious clubbed fingers of both hands (Fig. 1b). His shank tibias were observed with myxedema at the lower 2/3 sites with circular changes. Skin hyperplasia of the lower shanks was obvious with string-of-beads changes (Fig. 1c). The dorsal arterial pulses of bilateral feet weakened and muscle atrophy occurred to bilateral thighs and upper arms with haphalge-

sia. His physiological reflex was normal without pathological reflex induced. Blood routine, urine routine, stool routine, electrolyte, kidney function, liver function, and blood lipid tests did not show abnormalities. The thyroid function test showed free T3 > 30.8 pmol/L, free T4 > 154.8 pmol/L, T3 > 12.32 nmol/L, T4 > 387 nmol/L, TSH at 0.01 uIU/m, thyroglobulin antibody at 22.5 IU/ml, thyroid peroxidase antibody at 144.2 IU/ml, and thyrotropin receptor antibody > 40 IU/L. HIV and syphilis examination showed negative results. Abdominal ultrasound and chest scanning did not show obvious abnormalities. Electrocardiography showed T-U changes. The patient was diagnosed with hyperthyreosis, Graves' ophthalmopathy, myxedema of both shanks, and osteoarthritis.

During hospitalization, the patient was given low iodine diet. Propylthiouracil at 100 mg and lithium carbonate tablets at 0.25 g were orally administered thrice per day. He also received hormone impact treatment: 500 mg of methylprednisolone was intravenously infused starting the first day after hospitalization for three consecutive days. The second course of hormone treatment was arranged to be given one month later. At one week after the first course of treatment with methylprednisolone, the patient's indispositions of binocular photophobia, binocular lacrimation, and acratia improved. The patient was instructed to regularly review thyroid functions and recommended to receive monthly hormone impact treatment after discharge (three months of treatment were arranged for curative effect observation and telephone follow-ups were on). At two weeks after discharge, the patient's photophobia, lacrimation, and acratia almost disappeared. With the continuous application of hormone ointments to the pretibias of both legs, pretibial myxedema improved according to the patient.

Approval for this study was obtained from the Ethics Committee of the Affiliated Hospital of Zunyi Medical College. The patient signed an informed consent form.



Fig. 1: A 56-year-old male patient suffered from EMA. (a), exorbitism; (b), myxedema; and (c), acropachy

Discussion

EMA refers to the triad signs of exorbitism, myxedema, and acropachy (hypertrophic osteoarthropathy), which is a rare syndrome associated with hypercardiopathy (1). Because this condition has a low incidence rate and relevant literatures are rare, inexperienced physicians easily misdiagnose it as simple hyperthyreosis with complications.

Thyrotoxic exophthalmos can be divided into infiltration and non-infiltration exophthalmos. The former is associated with increases in sympathetic nerve excitability and ocular muscle tension caused by an increase in thyroid hormones, whereas the latter is a manifestation of the autoimmune inflammation of retroorbital tissues. Myxedema is a specific sign of Graves' disease. Under a light microscope, mucoprotein-like hyaluronic acid deposition accompanied by the infiltration of mastocytes, phagocytes, and fibroblasts most of which had granules can be observed in the skin with lesions; under an electron microscope, the deposition of a great number of microfibrils accompanied by glucoprotein and acid glycosaminoglycan (5). Hypertrophic osteoarthropathy is a condition caused by bone-surrounding soft tissue thickening and extensive periosteal new bone formation (6). Although the mechanisms underlying this condition remain unknown, interleukin-6 may participate in its development (7), and its characteristic signs arise from unusual reactions to some diseases.

According to literatures, EMA is manifested by hyperthyreosis, followed by exophthalmos, myxe-

dema, and acropachy sequentially with the development of the course of the disease (1, 2, 8). In this report, the development sequence of exophthalmos, myxedema, and acropachy was consistent with that reported in the literatures.

For the treatment of EMA, hyperthyreosis should be targeted first. On the premise of guaranteeing thyroid hormone function recovery, hypothyroidism should be tried to avoid as much as possible. Systemic glucocorticoids, immunosuppressive agents, and local radiotherapy have effects on exophthalmos (1), local external application of glucocorticoids has a satisfactory effect on myxedema, and surgical ablation can be performed for pharmacotherapy-resistant damaged skin. In this study, the patient's photophobia, lacrimation, and acratia greatly improved after three uses of impact treatment with methylprednisolone compared with those at the time of admission. At 2 weeks after discharge from the hospital, these manifestations almost disappeared. After the discharge, the patient continuously received external hormonal ointments for the pretibias of both legs and pretibial myxedema greatly improved. Treatment effectiveness would be observed after three months of hormone impact treatment.

EMA leads to exophthalmos, pretibial myxedema, and acropachy, particularly the two formers, and therefore seriously influences patients' daily life, causes their inferiority complex, and influences their social communication. Timely diagnosis and standard treatment can improve patients' outward appearance, signs, and quality of life.

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