Case report

Juvenile Systemic Lupus Erythematosus associated with Klinefelter's syndrome: A case report

Reza Shiari a,⁎ and Shirin Farivar b

a Pediatric Rheumatology, Department of Pediatrics, Mofid Children’s Hospital, Shahid Beheshti University of Medical Science, Tehran, Iran
b Division of Genetics, Faculty of Biological Science, Shahid Beheshti University, G.C., Tehran, Iran

ARTICLE INFO

Article history:
Received 19 April 2009
Accepted 8 September 2009
Available online 13 de mayo de 2010

Keywords:
(47-XXY)
X chromosomes
Systemic Lupus Erythematosus
SLE
Klinefelter's syndrome

ABSTRACT

We present the first reported case of juvenile Systemic Lupus Erythematosus with Klinefelter's syndrome in a 14-year-old Iranian boy who had leg ulcers and arthritis. He had low level of testosterone accompanied with hypergonadotropic hypogonadism. This case emphasizes the importance of two X chromosomes as a risk factor for Systemic Lupus Erythematosus in women and men with Klinefelter's syndrome (47, XXY).

Introduction

Klinefelter's syndrome is the most frequent major abnormality of sexual differentiation in men and affects one in every 500–1000 born males.1 Men with Klinefelter's syndrome have more than one X chromosomes, usually two X chromosomes (47-XXY). The phenotype is characterized by eunuchoid appearance, increased length of legs and arms, scanty facial and body hair, gynecomastia, small and firm testes, and hyperpigmentation of the lower extremities.2 Hormonally, the syndrome is characterized by hypergonadotropic hypogonadism in which testosterone level is usually half of normal.2,3 Patients with Klinefelter's syndrome show a higher percent of Systemic Lupus Erythematosus (SLE) and other skin-related autoimmune diseases than the normal popula-

⁎ Corresponding author.
E-mail address: shiareza@yahoo.com (R. Shiari).

Case report

A 14-year-old Iranian boy presented to our department with a 3-week history of arthritis on both of his wrists and ankles, accompanied by myalgia and photosensitivity. His physical examination revealed butterfly rash, palmar and plantar erythema, and some small ulcers on his legs. He had low head hair implantation, and hyperpigmentation on face. Other physical findings were gynecomastia, pectus excavatum, small and firm testicles, and long extremities. The results of his laboratory investigations were as follows: white blood cell count...
His renal biopsy showed mesangial glomerulitis. Although, our patient's sera were not positive for antiphospholipid antibodies. He was treated with oral prednisone, 6 mg/day, after the diagnosis of SLE was made. Studies have shown a clear relationship between low levels of testosterone and high prevalence of ulceration in patients with Klinefelter's syndrome. Treatment with testosterone leads to improvement of leg ulcers in these patients. Our patient showed both leg ulcers and low level of testosterone, whose leg ulcers were also reduced during subsequent therapy that included testosterone.

Males with untreated hypogonadism, associated with significant gonadal failure and very low levels of testosterone, have an increased risk of developing rheumatoid/autoimmune diseases. In fact, testicular dysfunction predisposes to the development of rheumatoid/autoimmune diseases. These patients have an increased frequency of antinuclear antibody and anticardiolipin antibodies compared with other hypogonadotropic hypogonadodipid patients. Although, our patient's sera were not positive for anticardiolipin antibodies, it was positive for antinuclear antibody (positive > 1:160 homogeneous pattern). SLE may be a presenting symptom of Klinefelter's syndrome and may lead to diagnosis of the disease. The first presentation of our patient was arthritis, myalgia, and photosensitivity. However, his follow-up revealed hypergonadotropic hypogonadism and his karyotype confirmed the diagnosis of Klinefelter's syndrome.

Humoral and cellular immune responses are enhanced in Klinefelter's syndrome, as a result of testosterone deficiency and increased levels of estradiol, which enhance autoantibody production. Treatment with testosterone has also proved to suppress both cellular and humoral immune responses in these patients.9,10

## Discussion

Klinefelter's syndrome can present at any age. In adult men, the diagnosis may be made during investigation for sterility, but, at puberty, eunuch body might be the hallmark. Children with Klinefelter's syndrome might be diagnosed because of learning difficulties or social problems. Klinefelter's syndrome and SLE occur together more often than would be expected by chance alone.7 Studies have shown a clear relationship between low levels of testosterone and high prevalence of ulceration in patients with Klinefelter's syndrome. Treatment with testosterone leads to improvement of leg ulcers in these patients.8 Our patient showed both leg ulcers and low level of testosterone, whose leg ulcers were also reduced during subsequent therapy that included testosterone.

Although, our patient's sera were not positive for antiphospholipid antibodies, it was positive for antinuclear antibody (positive > 1:160 homogeneous pattern). SLE may be a presenting symptom of Klinefelter's syndrome and may lead to diagnosis of the disease. The first presentation of our patient was arthritis, myalgia, and photosensitivity. However, his follow-up revealed hypergonadotropic hypogonadism and his karyotype confirmed the diagnosis of Klinefelter's syndrome.

Humoral and cellular immune responses are enhanced in Klinefelter's syndrome, as a result of testosterone deficiency and increased levels of estradiol, which enhance autoantibody production. Treatment with testosterone has also proved to suppress both cellular and humoral immune responses in these patients.9,10

## References