Rare Case of Klinefelters Syndrome With 48XXYY

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Rare Case of Klinefelters Syndrome With 48XXYY

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OBJECTIVE

Describe Klinefelters Syndrome with 48XXYY.

CASE PRESENTATION

A 28 year old male with klinefelter syndrome (KF) diagnosed during learning disability evaluation at age of 13 presented for follow up. Intriguingly his medical history was very complicated for his young age. He was on testosterone supplementation and his examination revealed tall stature, atrophic testis, gynecomastia. Intriguigingly his medical history for his young age was very complicated.

- He had diagnosis of childhood asthma that was poorly controlled untill the initiation of immunoglobulin therapy for common variable immunodeficiency.
- He had storke at age 14
- Atrial septal defect repaired at age of 20
- Pulmonary embolism managed with IVC filter and anticoagulation.
- On examination he weighed 366lbs (166.36kgs), was 77 inches tall and had bilateral small sized measuring ~10cc.
- Underdeveloped right frontal sinus and undeveloped left frontal sinus along with poor dentition had been noted on head imaging **Figure 1.** Imaging of his cervical spine showed loss of cervical lardosis **Figure 2.**

Since his records of KF diagnosis was unavailable and he had multiple complex medical problems laboratory testing to confirm diagnosis karyotyping was done. Karyotyping revealed 48,XXYY that explained many of his diverse medical problems which are typical of Klinefelters 48, XXYY syndrome. Despite his multiple medical problems and learning difficulties he has been working as high school basketball manager.

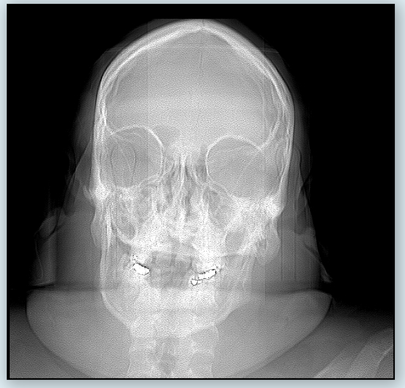

Figure 1. Craniofacial abnormalities.

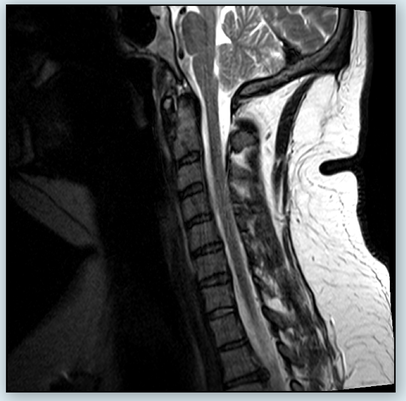

Figure 2. Loss of normal cervical lordosis.

DISCUSSION

KF is the most common congenital cause of primary hypogonadism, occurring in 1:1000 males[1]. While KF results from extra X chromosome in 80% of cases, in the remaining cases this results from numeric sex chromosome abnormalities (48,XXXY, 48,XXYY,49,XXXXY) or 46,XY/47,XXY mosaicism, or structurally abnormal sex chromosomes greater and lesser numbers of X chromosomes[2]. 48, XXYY syndrome, that occurs in 1:18000 males, is usually caused by double non-disjunction during spermatogenesis resulting in extra sex chromosomes can also rarely occur from non-disjunction of sex chromosomes in initial stages of a normal embryo[3]. The physical features of KF XXYY are similar to KF 47,XXY but with more pronounced phenotypic abnormalities including mild craniofacial dysmorphism, skeletal anomalies such as radioulnar synostosis and clinodactyly, lower cognitive function resulting in developmental delays, congenital cardiac anomalies and asthma manifest at younger age[5]. Autism spectrum disorders have been reported in more than 1/3rd of 48XXYY KF patients[4]. Their behavior abnormalities include hyperactivity, attention problems, impulsivity, aggression, mood instability, autistic-like behaviors, and poor social function. In addition to hypogonadism during adulthood, deep vein thrombosis and type II diabetes, both of which were seen in our patient occur in about 18% of patients with KF 48,XXYY[5]. Behavioural issues can make insulin and anticoagulation management extremely challenging.

CONCLUSION

KF 48, XXYY is a severe form of KF with additional clinical, neurodevelopmental & behavioural manifestation that make the management of KF challenging. Care of these individuals requires a multidiciplinary approach.

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