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Testosterone replacement therapy for the males affected with XXY syndrome

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ABSTRACT

XXY syndrome in males has been found in our society in the ratio of 1:500. It is a common condition, but often under diagnosed and undertreated. The indication of testosterone-replacement therapy (TRT) treatment requires the presence of low testosterone level. Although controversy remains regarding indications for testosterone supplementation in aging men due to lack of large-scale, long-term studies assessing the benefits and risks of testosterone-replacement therapy in men, reports indicate that TRT may produce a wide range of benefits for men with XXY syndrome. After the karyotyping test we can identify the addition of X chromosome in the male. Using of blood test we can identify the testosterone and oestrogen level in the body. Then by injecting the testosterone hormone we can reduce the syndromes of the XXY male simultaneously we can suppress the level of oestrogen hormone by giving the drugs.

Key Words: Testosterone, Oestrogen, Syndrome

Abbreviation: TRT-Testosterone Replacement Therapy

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1. INTRODUCTION

Klinefelter syndrome is a chromosomal condition that affects male physical and cognitive development. This is a condition that occurs in men who have an extra X chromosome in most of their cells. The syndrome can affect different stages of physical, language and social development. The most common symptom is infertility. They often don't make as much of the male hormone testosterone as other boys, teenagers with Klinefelter syndrome. It is important to start treatment at the age of their puberty. With treatment, most boys grow up to have normal sex lives, successful careers and normal social relationships.

Testosterone:
Testosterone is a steroid hormone and male sex hormone. In human, testosterone is secreted primarily in the testicles of males and the ovaries of females.In men, testosterone plays a key role in the development of male reproductive tissues such as the testis and promoting secondary sexual characteristics such as increased muscles, bone mass, and the growth of body hair.

2. SIGNS AND SYMPTOMS

Affected individuals typically have small testes that do not produce as much testosterone as usual. Testosterone is the hormone that directs male sexual development before birth and during puberty. A shortage of testosterone can lead to delayed or incomplete puberty, breast enlargement (gynecomastia), reduced facial and body hair, and an inability to have biological children (infertility). Some affected individuals also have genital differences including undescended testes (cryptorchidism), the opening of the urethra on the underside of the penis (hypospadias), or an unusually small penis (micropenis). Older children and adults with Klinefelter syndrome tend to be taller than their peers. Compared with unaffected men, adults with Klinefelter syndrome have an increased risk of developing breast cancer and a chronic inflammatory disease called systemic lupus erythematosus. Their chance of developing these disorders is similar to that of women in the general population. Syndrome doesn't produce enough of the male hormone testosterone, and this can have lifelong effects. Starting at the time of the usual onset of puberty, testosterone replacement can help treat or prevent a number of problems (Arver et al. 2013).

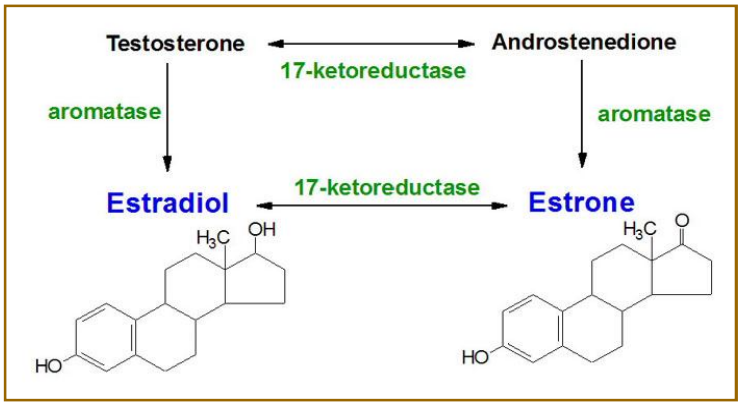
3. SCOPE OF THE STUDY

The aim of the study is to know about the individuals affected by the Klinefelter syndrome. The disease is diagnosed by the aminocentosis method and treating them at the age of their puberty to make them fertile by the testosterone hormonal therapy and by suppressing the oestrogen hormone.

4. METHODOLOGY

4.1. Aminocentosis Procedure

Before the start of the procedure, a local anaesthetic can be given to the mother in order to relieve the pain felt during the insertion of the needle used to withdraw the fluid. After the local is in effect, a needle is usually inserted through the mother's abdominal wall, then through the wall of the uterus, and finally into the amniotic sac. With the aid of ultrasound-guidance, a physician punctures the sac in an area away from the fetus and extracts approximately 20 ml of amniotic fluid. If used for prenatal genetic diagnosis, fetal cells are



Oestrogen:
It's a steroid hormone,that are secreted chiefly by the ovaries and placenta, that induce, stimulate changes in the female reproductive organs during the oestrous cycle, and promote development of female secondary sexual characteristics.

Anastrozole:
Anastrozole is one of the drugs used to combat oestrogen related problems in both men and women. Oestrogen reduction can be accomplished in several ways – by blocking it, by destroying it, by occupying existing oestrogen receptors, by lowering sex hormone binding globulin which in turn prevents oestrogen from forming.

separated from the extracted sample. The cells are grown in a culture medium, then fixed and stained. Under a microscope the chromosomes are examined for abnormalities. The most common abnormalities detected are klinefelter syndrome. In regard to the fetus, the puncture heals and the amniotic sac replenishes the liquid over the next 24–48 hour (Ronnie et al. 2012).

4.2. Karyotyping

To examine the phenotype of normal chromosome and male with XXY syndrome. Once the male has been identified with XXY syndrome .He has to be treated with the following treatment (Selice et al. 2013).

4.3. Blood Test

Test the level of testosterone hormone as well as oestrogen and progesterone in the case of XXY syndrome. If the testosterone hormone is lower than the normal level for the individual they have to undergo the Testosterone replacement therapy. Male with low testosterone has to be injected with testosterone hormone via intramuscular injection or through orally should be given once in 2 weeks according to their hormone level in the blood. The sperm has to check before the injection of next dose. At the same time we have to suppress the oestrogen which is responsible for the female character in the XXY male. Giving the Anastrozole orally for XXY syndrome male can suppress the oestrogen level so that the receptor can't identify the gene responsible for the production of these hormones.

4.4. Aromatase

Aromatase also called oestrogen synthetase or oestrogen synthase is an enzyme responsible for a key step in the biosynthesis of estrogens. It is an important factor in sexual development. It catalyzes the last steps of oestrogen biosynthesis from androgens. It catalyzes the conversion of androgen into oestrogen. The androgen/oestrogen balance is essential for normal sexual development and reproduction in mammals. In the testis, the maintenance of this balance is fine tuned via endocrine and paracrine factors, but is also related to aromatase activity (Bassil et al. 2009).

5. RESULTS

After the treatment, examining the male with XXY we can see increase in the number of sperms, so that they can fertile and even reduces the symptoms responsible for XXY.

6. DISCUSSION

The requirement of oestrogens for spermatogenesis is not completely understood beside its role in gonadotrophin control. It is obvious that men with an aromatase deficiency or oestrogen resistance have altered (or abnormal) spermatogenesis. Significant decrease of aromatase in immotile spermatozoa, suggest that aromatase/oestrogens are involved in the acquisition of sperm motility.

7. CONCLUSION

We must create an awareness to the society to accept the people with XXY syndrome one among them and people with XXY syndrome to come forward to take up the treatment .Parents also should come forward to give treatment to their child with XXY syndrome and they should take care of their health.

SUMMARY OF RESEARCH

1. This study is to diagnose XXY individuals through aminocentosis method at the fetus level.
2. To treat the individuals with testosterone hormonal therapy and by suppressing the oestrogen and progesterone hormones.

FUTURE ISSUES

From this study, we suggest that every pregnant woman has to undergo the aminocentosis method to identify whether their fetus has any genetic disorder like klinefelter syndrome.

DISCLOSURE STATEMENT

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