A RARE ENDOCRINE CASE REPORT OF KALLMANN SYNDROME

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INTRODUCTION:

Kallmann syndrome is a rare genetic disorder due to failure of gonadotrophin releasing hormone neurons migration to hypothalamus during embryonic development. These patients present with absent or delayed sexual characteristics i.e absent beard and moustaches along with small testicular volume and micropenis.

Examination revealed eunuchoid habitus, anosmia, absent facial hair, Tanner stage 2 testicular volume, penile length, and pubic hair.

Investigations showed hypogonadotropic hypogonadism, normal ultrasound abdomen, osteoporosis on DXA scan, azoospermia in semen analysis, and hypoplastic olfactory bulb on MRI Brain which all strengthen our diagnosis of kallmann syndrome.

We started treatment with parenteral Androgen i.e Testosterone. After 6 months of treatment with testosterone, he started to have facial hair. We are monitoring the patient and our plan is to put him on Human chorionic gonadotrophin once he will desire fertility.

KEY WORDS: Kallmann syndrome, anosmia, hypogonadotropic hypogonadism.

CASE REPORT:

A 28 year old male presented to us with absence of secondary sexual characteristics i.e absent beard and moustaches along with small testicular volume and micropenis. He was the only son of his parents along with two sisters who were having no health issues.

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Other abnormalities associated with kallmann syndrome are renal defects, colour blindness, cleft lip and palate, and sensorineural deafness.

Kallmann syndrome 1 can be X-linked in which gene deletions in the region of xp22.3 (kal 1) causes the absence of KAL 1 gene which codes for anosmia, an adhesion molecule having key role in migration of GnRH neurons and olfactory nerves to hypothalamus. Kallmann syndrome 2 is inherited in an autosomal dominant pattern and is due to mutation in FGFR 1 (fibroblast growth factor receptor 1) gene.

Kallmann syndrome 3 is inherited as autosomal recessive pattern and appears to be related to mutations in PROKR 2 and PROK 2 encoding pokineticin receptor 2 and prokineticin-2.

One such case is reported here.
area. So he was in Tanner stage 2. His arm span was 5cm more than his height i.e Eunuchoid habitus. Systemic examination was otherwise unremarkable except sense of smell which was reduced.

Patient was having normal baseline investigations including CBC, LFT's, RFT's, USG abdomen, urine complete and Chest X Ray. His vitamin D level was 16.9ng/ml and serum calcium was 8.6mg/dl.

DXA scan revealed osteoporosis with T score (-3.1).

His prolactin levels and thyroid profile was normal. Serum testosterone was 2.50ng/dl along with LH 1.30mIU/ml and FSH 1.60uIU/ml.

MRI brain with pituitary protocol i.e Gadolinium enhancement revealed normal dimensions of pituitary gland with hypoplastic olfactory bulbs. Based on these, patient was diagnosed as Kallmann syndrome and was put on parenteral androgen i.e testosterone along with adequate calcium and Vitamin D replacement. HCG treatment will be planned once he desires fertility.

**DISCUSSION:**

Kallmann syndrome (KS) is characterized by secondary hypogonadism with anosmia. This clinical scenario was first reported in literature in 1856 by Maestre de san jaun who was a Spanish anatomist. Classically Kallmann syndrome (KS) and idiopathic hypogonadotropic hypogonadism (IHH) are congenital disorders but adult onset is also noted. Male to female ratio is 4:1 to 5:1.

Pathogenesis of Kallmann syndrome is still not fully understood. The difference between idiopathic hypogonadotrophic hypogonadism (IHH) and Kallmann syndrome (KS) is hypoposmia or anosmia, due to hypoplastic or absent olfactory bulbs in MRI, which is present in KS while absent in IHH. 50 % genes identified causing IHH and KS. Remaining still unidentified.

Clinical presentation of KS is with micropenis, delayed secondary sexual features and infertility. While anosmia or hyposmia is usually a clinical finding. Tarique S et al reported a case of Kallmann Syndrome with hypogonadotropic hypogonadism, short stature and anosmia.

Jonklaas reported a case of Kallmann syndrome associated with craniopharyngioma. Diagnosis is usually clinical but levels of LH, FSH and testosterone help as all are below the references ranges. MRI brain also demonstrate either hypoplasia or absence of olfactory bulbs. While pituitary gland dimensions are within limits, DXA usually interpret osteoporosis. Treatment is divided into two aspects i.e hormone replacement and fertility. Hormone replacement will lead to most of the physiologic changes of the body that normally occur in humans at puberty. But there is no increase in testicular volume with testosterone in males and no ovulation in females with estrogens and progesterone. For fertility, gonadotrophin LH and FSH administration is recommended. HCG administration is an alternative of a GnRH pump which is not widely available.

**REFERENCES:**

