Case Report

A RARE ENDOCRINE CASE REPORT OF KALLMANN SYNDROME

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ABSTRACT:

Kallmann syndrome is a rare disorder of secondary hypogonadism with or without anosmia/ hyposmia due to abnormal migration of gonadotrophin releasing hormone producing neurons in hypothalamus. We report a case of 28 year old male who presented to us with absent secondary sexual characteristics i.e absent beard and moustaches along with small testicular volume and micropenis.
Examination revealed eunuchoid habitus , hyposmia , absent facial hair, tanner stage2 testicular volume , penile length and pubic hair.
Investigations showed hypogonadotrophic 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 06 month 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, hypogonadotrophic hypogonadism.

INTRODUCTION:

Kallmann syndrome is a rare genetic disorder due to failure of gonadotrophin releasing hormone neurons migration to hypothalamus during embryonic development.[1]
These patients present with absent or delayed puberty along with additional features of anosmia or hyposmia which distinguish it from other forms of hypogonadotrophic hypogonadism. It occurs in both sexes.[2] Though it is five times more common in males than females.
Other abnormalities associated with kallmann syndrome are renal defects, colour blindness, cleft lip and palate and sensorineural deafness[3].
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 pattren and appears to be related to mutations in PROKR 2 and PROK 2 encoding pokineticin receptor 2 and prokineticin-2.[4]
One such case is reported here.

CASE REPORT:

A 28 year old male presented to us with absence of secondary sexual characteristics i.e absent beard and moustache 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.
On Examination, he was hemodynamically stable. His height was 182cm and weight was 72kg. His stretched penile length was 5cm and testicular volume was 4-5ml approximately. Pubic hair was sparse not covering whole pubic

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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 pituitiary 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 1st reported in literature in 1856 by Maestre de san jaun who was a Spanish anatomist. Classically Kallmann syndrome (KS) and idiopathic hypogonadotrphic hypogonadism (IHH) are congenital disorders but adult onset is also noted. Male to female ratio is 4:1 to 5:1.[5]

Pathogenesis of Kallmann syndrome is still not fully understood. The difference between idiopathic hypogonadotrphic hypogonadism (IHH) and Kallmann syndrome (KS) is hypoosmia 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. [6]

Clinical presentation of KS is with micropenis, delayed seconadary sexual features and infertility. While anosmia or hyposmia is usually a clinical finding. Tarique S et al reported a case of Kallmann Syndrome with hypogonadotrophic hypogonadism , short stature and anosmia.[7]

Jonklas reported a case of Kallmann syndrome associated with craniopharyngioma.[8]

Diagnosis is usually clinical but levels of LH, FSH and testosterone help as all are below the refrences ranges. MRI brain also demonstarte either hypoplasia or absence of olfactory bulbs. While pituitary gland dimensions are within limits, DXA usually interpret osteoporosis. [9]

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 administartion is an alternative of a GnRH pump which is not widely available. [10]

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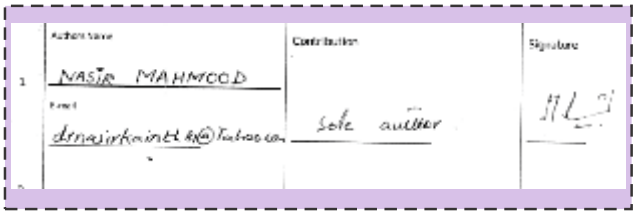

CONTENTMENT IS THE CAPITAL WHICH WILL NEVER DIMINISH.

Hazrat Ali (Karmulha Wajhay)