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EFFECT OF SERUM PROLACTIN ON FERTILITY - A CASE REPORT

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ABSTRACT

Hyperprolactinaemia is the presence of abnormally high levels of prolactin in the blood. Normal levels are less than 20 ng/mL for women, and less than 450 mIU/L for men. A prolactinoma is a benign tumor (adenoma) of the pituitary gland that produces a hormone called prolactin. It is the most common type of pituitary tumor. Hyperprolacnimemia is a cause for infertility which is reversible with treatment with dopamine agonists.[1]

KEY WORDS: Hyperprolactinemia – Prolactinoma – Infertility

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CASE REPORT

A 46 years old female patient married at the age of 16 years. At the age of 22 years, she developed galactorrhea [1] for which she went to the hospital for the first time. She gave a history of infertility. Prolactin levels were checked and found to be higher. MRI was done and diagnosed as a case of prolactinoma. Medical management was started at the age of 22 years in the form of Oral Bromocryptine. At the age of 30, she conceived for the first time. She was advised to continue Bromocryptine during pregnancy. At 8 months pregnancy was terminated due to congenital anomalies. The patient again conceived at the age of 32 and gave birth to a female child. The child is now 14 years old. Now the patient presented with 3 months of amenorrhea. Pregnancy test is negative now. Prolactin levels checked and found to be high.

Investigations
Prolactin level: At the age of 22 years it was found to be 379 ng/ml, at six months after treatment with bromocryptine it was 88 ng/ml, at the time of first conception it was 33 ng/ml, at six months after conception it was 58 ng/ml, at term it was 74 ng/ml. At the age of 42 ---- 189 ng/ml (after voluntary discontinuation of dopamine agonist)

DISCUSSION

Prolactin
Prolactin being secreted by the lacto trope cells of anterior pituitary is encoded by the PRL gene in chromosome 6. It acts like cytokines through prolactin receptors. Secretion is regulated by hypothalamus through dopamine which inhibits the secretion [2,3]

Chemical structure of prolactin[2,3]
Prolactin is composed of 199 amino acids, the molecular wt being 24000 daltons. It has a single chain of polypeptide with 4 major helices, 2 minor helices and 2 loops. The 3 disulphide bonds are responsible for its tertiary structure. Cleavage of disulphide bonds leads to loss of biological activity

Reference ranges [2,3]
General guidelines for diagnosing prolactin excess (hyperprolactinemia) define the upper threshold of normal prolactin at 25 µg/L for women, and 20 µg/L for men. Similarly, guidelines for diagnosing prolactin deficiency (hypoprolactinemia) are defined as prolactin levels below 3 µg/L in women and 5 µg/L in men.

Cases
Physiological: Lactation, Sleep, Stress, Coitus, Exercise
Pharmacological [4]
Antipsychotics
Typical Haloperidol Chlorpromazine, Thioridazine, Thiothixene
Atypical Risperidone, Amisulpride Molindone, Zotepine
Antidepressants
Tricyclics Amitriptyline, Desipramine Clomipramine Amoxapine SSRI Sertraline, Fluoxetine, Paroxetine MAO-I Pargyline, Clorgyline
Other Psychotropics
Buspirone Alprazolam Prokinetics Metoclopramide, Domperidone
Antihypertensive
Alpha-methylldopa, Reserpine, Verapamil
Opiates, Morphine
H2 Antagonists Cimetidine, Ranitidine Others Fenfluramine, Phystostigmine Chemotherapics
Pathological: [6,7,8]
Hypothalamic pituitary stalk Damage, Granulomas, Infiltrations, Irradiation, Rathke'scyst, Trauma, pituitary stalk resection, suprasellarsurgery, Tumors, Craniopharyngioma, Germinoma Hypothalamic metastases, Meningioma, Suprasellar pituitary mass extension
Clinical manifestation
Males: Loss of libido, Infertility
Females: Oligomenorrhea, Amenorrhea, Infertility, Galactorrhea In both sexes, headache and visual field defects due to mass effect and Osteoporosis due to hypogonadism

Investigations for all patients
Complete blood count, ESR, Urea and electrolytes, LFT, Bone profile Fasting glucose and lipids, Baseline pituitary function, MRI pituitary
For selected cases [9]
CXR, ECG, ECHO, Visualperimetry and acuity
Insulin stress test, Glucagontest, Arginine
GHRH test, Bone densitometry scan

Investigations done for this patient: basic blood investigations, ECG, serum prolactin and MRI brain, which revealed prolactinoma of <10mm size.

Medical treatment:
Bromocryptine, Carbegoline

Bromocryptine [10,11]
It is an ergot alkaloid and D2 receptor agonist. The initial dose being 1.25-2.5 mg day, may be increased by 2.5 mg/day q2 for 7 Days. Usual therapeutic dosage is 5-7.5 mg/day, ranging from 2.5-15 mg/day. Adverse effects are nausea, vomiting, postural hypotension, delusion, auditory hallucination, arrhythmias, pericarditis and rarely seizures.

Carbegoline [5,10,11]
Longer acting, Costlier, Side effects is less, Data on the safety use during pregnancy is limited

Surgery [6]
Gold standard treatment in 1970s.Presently medical management is the gold standard.

Indications for surgery
1. Size of the tumor not decreasing with medical therapy.
2. The patients not withstanding adverse effects of medical therapy.

Hyperprolacteinemia and pregnancy
Studies show there is no proven teratogenic effects of dopamine agonists [12] But still dopamine agonists should be stopped during pregnancy if possible Periodical follow up should be done by visual field testing If more symptomatic, dopamine agonists can be used at a lower dose.

CONCLUSION
In our case, the patient was clinically diagnosed as having hyperprolactinemia, which is a treatable cause of infertility and requires long term treatment. [13].

REFERENCES
