THE ROLE OF RAT HYPOTHALAMUS KISS1, KISS1 RECEPTOR, NEUROKININ AND NEUROKININ RECEPTOR GENES IN THE PROLACTIN-INFERTILITY RELATIONSHIP

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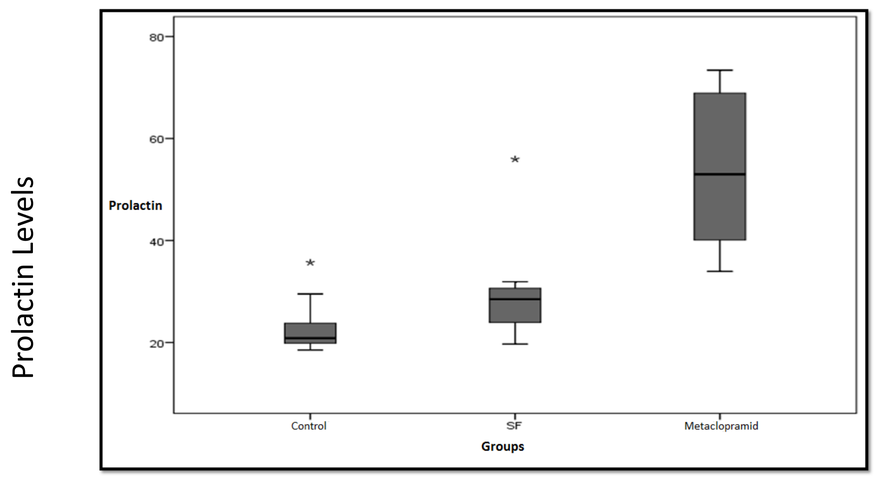
INTRODUCTION

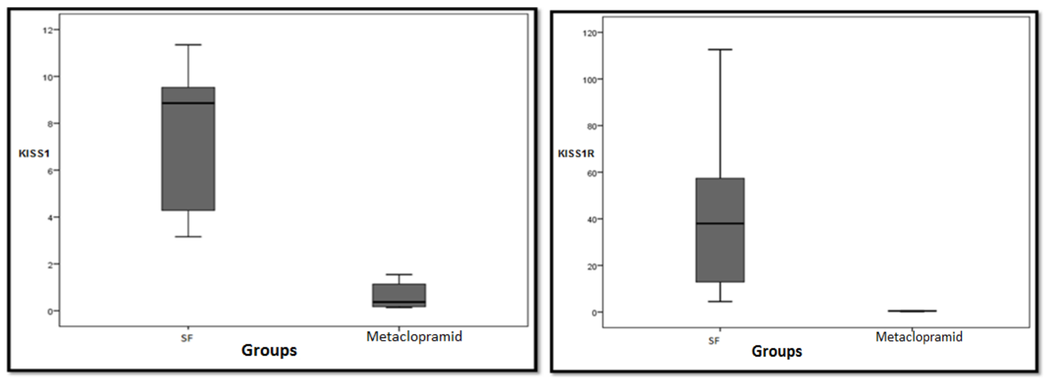
Prolactin hormone, which is secreted from the hypophysis, plays a role in milk production. Prolactin also functions in metabolism and reproductivity. Increase in prolactin blood level leads to various disorders. The most important disorders of these are anovulation and amenore/galactore. Anovulation is a critical problem and gives rise to infertility. The ovulation can be controlled by hormones and biological substances called neuropeptide. It has been considered that kisspeptin and neurokinins are involved in the control of ovulation. Kisspeptins, encoded by Kiss1 gene separately expressed in neuronal populations of hypothalamus, are classified in neuropeptide family. They play crucial roles in timing of puberty and fertility. Furthermore, the other prominent neuropeptide, which has been thought to be effective in these situations, is Neurokinin B (NKB) In recent neuroanatomic studies, it has been shown that NKB is synthesized in particularly hypotalamic neurons and arcuate nucleus in response to sexual steroids. So it has been suggested that NKB indirectly affects KISS1 synthesis since NKB and kisspeptin reside together in this region. It has been long thought that NKB and KISS1 interact with hormones involved in puberty and reproductivity. In this regard our aim was to delineate the interaction between them.

METHODS

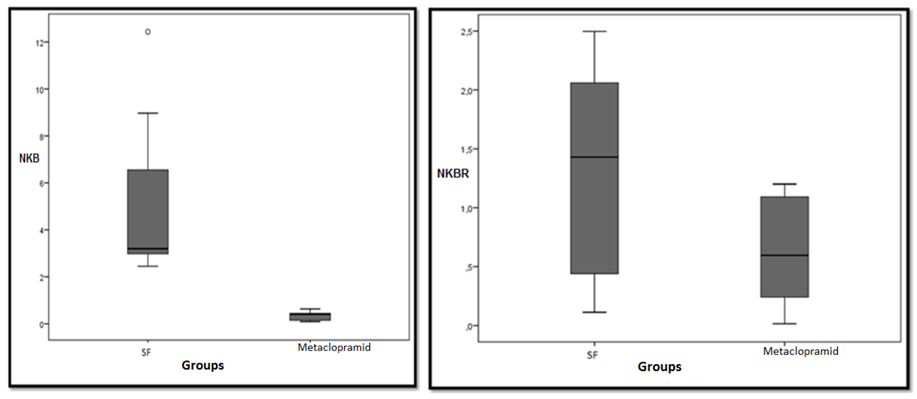
In this study, 40 female 12-16 weeks old Wistar Albino rats were used. 3 groups were included; control group (10), physiological saline (SF) group (10), and metoclopramide group (20). Blood prolactin levels of rats belonging to all groups after two weeks of metaclopramide administration period prolactin was measured using ELISA immunoassay kit. Expression levels of Kiss1, Kiss1 Receptor, Neurokinin, Neurokinin Receptor genes were analyzed along with blood PRL levels of all rats.

RESULTS





Graph showing Kiss1, Kiss1R expression values in metoclopramide and SF groups



Graph showing NKB, NKBR expression values in metoclopramide and SF groups

CONCLUSİON

This study investigated the relationship between prolactin and infertility in terms of of kisspeptin and NKB. Therefore, in our study we investigated association between Kiss1, Kiss1 receptor, neurokinin and neurokinin receptor and infertiliy in face of increased in blood prolactin levels in rats.

We found that Rats with high prolactin levels had lower Kiss1, Kiss1 Receptor and neurokinin gene expression compared to control group ($p<0,001$).

As a result, we believe that neuropeptides mediate adverse effects of increased prolactin on reproduction and our study may shed light on infertility problems caused by high prolactin levels.

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