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Title:

Histopathological Study of Effects of Recombinant Follicle Stimulating Hormone on Reproductive System of Rats

Abstract:

The present study was conducted in the animal house of the College of Veterinary Medicine/University of Basra. Its aim was to evaluate histopathological changes induced by recombinant follicle stimulating hormone (follitropin alpha) on reproductive organs, and to evaluate any role of oxidative stress in infertility treatment.

A total of 48 rattus norvegicus female rats were classified into 4 equal groups of 12 animals as follows: Group 1 (control group) were given drinking distilled water.

Group 2 (single dose group) were injected with 0.5 iu of the drug subcutaneously. Group 3 (double dose group) were injected 1 iu of the drug subcutaneously. Group 4 (triple dose group) were injected 1.5 iu of the drug subcutaneously.

The drug was given in the pro-estrous phase for ten consecutive cycles, then 6 animals from each group were sacrificed to study the histopathological effects. Blood samples were collected from the rats by cardiac puncture, the blood then centrifuged to obtain serum used for hormonal study , whereas 6 animals were left for mating to see the effect of the drug on the offspring.

The histopathological study of the ovaries, uterus, liver, and kidneys revealed many changes caused by the drug on these organs .The ovarian sections showed many graafian follicles without ova and many corpus luteal cysts, fibrosis, and thickened granulosa cell layer, while the ovary was surrounded by excessive adipose tissue . The uterus in single and double doses showed dilated cavity, thin endometrium, thin muscularis and diminished endometrial glands while in triple dose showed atrophy of endometrial lining and glands, hypertrophied muscular layer with slit like endometrial cavity and formation of multiple endometrial cyst. The liver sections showed many changes like dilated central vein , congestion of sinusoids , vacuolation of hepatocytes , with moderate degree of fatty degeneration A few hepatocytes appeared necrotic but without inflammatory response. The kidneys in single and double doses showed unremarkable changes, while in triple dose glomerular congestion, congested vessels, hemorrhage, and degeneration and necrosis of proximal tubules were found. The results of hormonal changes induced by follicle stimulating hormone along with oxidative stress biomarker malon-dialdehyde (MDA) are

presented as follows: FSH level showed significant increase ($P \leq 0.05$) in single dose group compared to control and other treated groups. While there is non-significant change ($p \leq 0.05$) in FSH concentration in double and triple dose groups compared to control group.

In triple dose group LH level represent significant increase ($P \leq 0.05$)) in comparison with other treated groups, and is non-significant ($P \geq 0.05$)) compared to control. In single and double dose groups, there is significant decrease ($P \leq 0.05$) in LH level compared to triple dose group and control group.

Progesterone level represents significant increase ($P \leq 0.05$)) in triple dose group in comparison with control group and other treated groups. There is significant decrease ($P \leq 0.05$) in estrogen level in all treated groups in comparison with control group.

MDA concentration represent significant increase ($P \leq 0.05$)) in in all treated groups in comparison with control group.