

## ESTIMATION OF ESTROGEN AND PROGESTERONE AFTER LAPAROSCOPIC OVARIOCTOMY IN BITCHES

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### ABSTRACT

This study was planned to assess the effect of laparoscopic ovariectomy in bitches on estrogen and progesterone hormones levels pre and post operation .

The hormonal analysis was performed by Serum which was extracted from blood samples , the hormonal test include ( estrogen and progesterone ) , by using a device called Mini vidas system hormones assay with the kit of Bio merio of same company and then results were recorded , which include decrease in level of ( estrogen and progesterone ) post operation in two groups , but the level of depression in group B ( bilateral laparoscopic ovariectomy ) more than group A ( unilateral laparoscopic ovariectomy ).

### INTRODUCTION

The female reproductive hormones arise from the hypothalamus, the anterior pituitary, and the ovaries. Although detectable amounts of the steroid hormone estrogen are present during fetal development, at puberty estrogen levels rise to initiate secondary sexual characteristics. Gonadotropin releasing hormone (GRH) is released by the hypothalamus to stimulate pituitary release of LH and FSH, which propagate egg development in the ovaries. Eggs (ova) exist at various stages of development[ 1 ] . The term estrogen is used to refer to the female sex hormones estrone , estradiol and estriol [ 2 ]. These hormones are present in the blood stream of female and male , although male produce much smaller amounts. Estrogen levels increase and decrease at different times of the estrous cycles of a female . The falling estrogen and progesterone levels that follow trigger LH and FSH, starting the cycle all over again. In addition to its major roles in the menstrual cycle, estrogen has a protective effect on bone loss, which can lead to osteoporosis. Estrogen plays an essential role in the growth and development of female sexual characteristics as well as the reproductive process[3]..

Hormones like estrogen are sometimes called "chemical messengers" because they carry information and instructions from one group of cells in the body to another. Estrogen circulates in the bloodstream and affects not only female sex organs such as the uterus, but also the brain, bones, heart and liver [4]. Low estrogen, however, is related to liver enzymes. Turner syndrome, a disease in which a female child is missing a sex chromosome [5]. The development of secondary sex characteristics in

female is driven by estrogens, to be specific, estradiol. These changes are initiated at the time of puberty, most are enhanced during the reproductive years, and become less pronounced with declining estradiol support after the menopause. Thus, estradiol enhances breast development, and is responsible for changes in the body shape, affecting bones, joints and fat deposition. Fat structure and skin composition are modified by estradiol [6].

The study aimed to : Estimate estrogen and progesterone hormones pre and post operation .

## **MATERIALS AND METHODS**

**Animals** :- Sixteen local breed female stray dogs , aged between( 1 – 1.5 ) years . weight range between ( 17 – 29 ) kg were used in this study , the bitches were clinically healthy , and kept in the dogs house at the college of veterinary medicine / University of Basra , the animals divided into two groups ( 8 animals in each group) , food and water given freely during the adaptation period, All animals were treated against internal and external parasite by using (Ivermectin at a dose of 200 microgram/kg),before two weeks from operation .

## **MATERIALS**

The blood samples were collected aseptically by disposable syringe from the saphenous vein before and 1 month post-operation . Separation of serum by centrifuging of samples at 2000 rpm for five minutes, then the serum was aspirated by pipette and transferred to plastic covered test tube which stored at (-20° C) in deep freezer for hormonal test. which performed by Serum which was extracted from blood sample, collected without anticoagulant and freezer until the analysis , the hormonal test include ( estrogen and progesterone ) ,

by using a device called Mini vidas system hormones assay with the kit of Bio merio of same company .

Estrogen test done by ( florescent sandwich method ) by the following procedure :- switch on the instrument , open the assay kit leaved the material to reach room temperature 25 c° , prepare the sample required ( serum ) , put the sample in strep channel about 200 µl , run the instrument option , then wait 40 minutes , the result appear automatically on led display .

Progesterone test done by ( sandwich method ) by the following procedure :- switch on the instrument , open the assay kit leaved the material reach room temperature 25 c° , prepare the sample require ( serum ) , put the sample in strep channel about 200 µl , run the instrument option , then wait 40 minutes , the result appear automatically on led display .

## **RESULTS**

The study showed decrease in level of estrogen and progesterone hormones after laparoscopic ovariectomy in two groups ( Unilateral and Bilateral ) but in group

B ( Bilateral ovariectomy ) the level of estrogen and progesterone hormones decreased more than group A ( Unilateral ovariectomy ) as in the Table ( 1 ) and Table ( 2 ) : -

**Table ( 1 ) Biochemical test ( hormonal analysis ) of the bitches in group A (Unilateral Laparoscopy ovariectomy ) :-**

parameters	Estrogen test ( pg/ml )	Progesterone test ( ng/ml)
Pre operation	150.7 ± <b>45.95</b>	2.66 ± <b>1.95</b>
Post operation ( 30 days )	127.43 ± 39.15	2.42 ± <b>0.76</b>
df =8	t= -2.656 p < 0.05	t=0.245 p > 0.05

**Table ( 2 ) Biochemical test ( hormonal analysis ) of the bitch in group B ( Bilateral Laparoscopy ovariectomy ) :-**

parameters	Estrogen test ( pg/ml )	Progesterone test ( ng/ml)
Pre operation	131.25 ± 51.34	1.7 ± <b>0.84</b>
Post operation ( 30 days )	36.30 ± 9.47	0.1 ± <b>0.07</b>
df =8	t= - 4.023 p < 0.05	t=-2.332 p < 0.05

## DISCUSSION

In this study the range of estrogen level in group A about (150.7 ± 45.95 ) pre operation and decrease to (127.43 ± 39.15) post operation, and the range of progesterone level in group A about (2.66 ± 1.95)pre operation and decrease post operation ( 2.42 ± 0.76 ). less reduction in this group ( unilateral ovariectomy ) because the other ovary secret quantities from hormones larger than normal to treated the defect in hormones level [ 7 ] In group B ( bilateral ovariectomy ) the range of estrogen level about (131.25 ± 51.34) pre operation and decrease to (36.30 ± 9.47) post operation, and the range of progesterone level about (1.7 ± 0.84)pre operation and decrease post operation (0.1 ± **0.07**). greater reduction in this group because The ovaries are the major source of these hormones [ 8 ],

The evaluation of hormonal parameters after laparoscopic ovariectomized bitch show decrease level of estrogen and progesterone hormones after surgery , this results agree with [ 9 ]. Laparoscopic versus open ovario hysterectomy in dogs :a comparison of postoperative pain and morbidity. And with [10] laparoscopic ovariectomy in female dogs. And from conclusion of this study found effect for reduce the estrogen hormones on other organs which agree with [4].. "Estrogen-related mood disorders: reproductive life cycle factors" and agree with [3]. Steroid Hormone Action, Estrogen and progesterone are female reproductive hormones often used to evaluate the reproductive status of an animal. [9]. Due to the source specificity, their estimation has been indicated to assess the effects of surgical techniques following ovariectomy [7] . In 2 groups, a significant (  $p > 0.05$  )decrease in estrogen and progesterone was observed immediately after the operation, up to the one month postoperative , which was attributed to the effective removal of its major source, during the different sterilization operations in the 2 groups. The results of this study indicated that laparoscopic ovariectomy by laparoscopic clips in dogs avoided hemostasis and effective removal of ovarian structures .

### تقييم المعايير الهرمونية ( الاستروجين والبروجسترون ) بعد استئصال المبايض بواسطة الجراحة المنظارية في إناث الكلاب

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#### الخلاصة

تهدف الدراسة إلى قياس هرموني الاستروجين والبروجسترون قبل وبعد عملية استئصال المبايض في إناث الكلاب بالجراحة المنظارية.

التحليلات الهرمونية تتم بواسطة المصل المفصول من عينات الدم . الاختبارات تتضمن هرموني الاستروجين والبروجسترون بواسطة استعمال جهاز الميني فايدس مع ألكت الخاص به ومن ثم تسجيل النتائج . والتي تتضمن انخفاض في مستوى هرموني الاستروجين والبروجسترون بعد العملية ولكن مستوى الانخفاض في المجموعة ب ( استئصال المبيضين بواسطة الجراحة المنظارية ) اكبر من المجموعة أ ( استئصال احد المبيضين بواسطة الجراحة المنظارية ) .

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