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A comparative morphological and morphometrical study between the pregnant and non-pregnant female reproductive system of local breed cat (Catus felius)

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KEYWORDS	Abstract	
Ovary, uterine tube,	Female reproductive system of cat was used to inve	stigate the morphometrical features of non-
uterus,	pregnant and pregnant animal. Non-pregnant reprod	uctive system was small size, located in the
morphological,	pelvic cavity, while during the pregnancy the sys	tem enlarges involved many fetues within
morphometrical.	uterine horns and occupied the abdominal cavity. The	he total lengths and weights of reproductive
	system showed significant differences (P \leq 0.05) b	etween non-pregnancy (length and weight
	were 14.36±1.32cm and 99.10±0.9g) respectively, a	nd pregnant (Length and weight at 2 nd term
	of pregnancy were 17.49±2.06cm and 247.11±4.16g	g respectively). Ovaries revealed significant
	differences between weight of right ovary at 3rd ter	m pregnancy (1.80±0.09g) and that of non-
	pregnant (0.81±0.10g). The uterine tubes of pregn	ant cat located in abdominal cavity and a
	significant differences between the weights of left	uterine tube (1.69±0.06g) and right uterine
	tube (1.80±0.09g) of pregnant and those of	non-pregnant cat (left- $0=26\pm0.07$) and
	(right=0.26±0.09). Infundibulum revealed signification	cant differences between the lengths of
	pregnant cat (right infundibulum=7.37±0.19mm) (le	ft infundibulum=7.41±0.29mm) and that of
	non-pregnant cat (right infundibulum=5.72±0.1	2mm) (left infundibulum=5.81±0.7mm).
	Ampulla revealed significant differences betwee	en lengths of pregnant (right ampulla
	=15.81±0.59mm) (left ampulla =15.41±0.85m	m) and that of non-pregnant (right
	infundibulum=12.19±0.15mm) (left infundibulum=1	2.17±0.11mm). Uterus of non-pregnant cat
	comprises of Y-letter shape horns, pinkish colour	and located in the pelvic cavity, while in
	pregnant composed of two huge uterine horns fille	d with foetuses and occupy the abdominal
	cavity. The statistical analysis of uterus revealed s	ignificant differences between the lengths,
	diameter and the weight of the pregnant periods and	those of non-pregnant period.

Introduction

Local breed cat (Felis domesticus) is a carnivore spices that has some physiological features common with a human than experimental rabbits or rodents, also depends in behavioral and biomedical researches, especially in the neurological study (James, 1995). The cats were neglected in the histology veterinary literatures, and the most studies delis with the surgical and medical aspects and other sectors of the veterinary science. The reproductive system of cat is classified as a bicorniate type that comprised two uterine horns with well demarcated body (Dyce et al., 2009). Female cats are the most familiar animals have especial gender characteristics as well as they are polyestrous with ovulation has promoted during coitus (Dyce et al., 2009; Reynaud et al., 2020). and the ovulation a half percent of the domestic cats always occurs without

usually occurs in cat when the ovulation is not followed by pregnancy so the corpus luteum remains active (Maya-Pulgarin et al., 2017). The cat uterine cycle differs from that in ungulates and dogs because they showed spontaneous ovulation followed by formation of corpus luteum in each estrous cycle (Maya-Pulgarin et al. 2017 & Concannon, 1993). The cat has a luteal phase of non-pregnant that lasts about one-half of a normal gestation, consequently it has progesterone levels in blood is about 35-40 days in pseudo pregnant and for approximately 60-65 days in pregnant cat (Bartel et al., 2014). The female cat revealed reproductive feature in compare for other carnivores because it display shorter luteal phase that allows for an earlier return to estrual cyclicity (Chandra & Adler, 2008). The histological and

cervical or vaginal stimulation. The pseudo pregnancy



endocrine activities of early corpus luteum formation are the same in pregnant and pseudo pregnant cats until days 10-12 after coitus (Feldman and Nelson, 2004). There is no available anatomical description of cat female reproductive tract of the local breed cat those are useful to make the cat a model for studying comparative of different sciences of the felidae family, as in surgical techniques such as laparoscopic sterilization, a laparoscopic artificial insemination, gonadotropin therapy combined. On other hand to contribute in provide the information about postnatal developmental of cat reproductive organs those important as experimental model. This study is aimed to describe the events related to the sexual changes of the female genital organs during the pregnancy and non-pregnancy.

Materials and Method

Ethical approval

The design of the current study approved by an animal care and use committee, at college of veterinary medicine, University of Baghdad. Baghdad, Iraq.

Animals' preparation

A total of four adult non-pregnant female cats and eight pregnant female cats (At 2nd and 3rd terms of gestation) were used for this study in the department of anatomy and histology at the College of the Veterinary Medicine/University of Baghdad during periods from January 2022 to June 2023. Ovario-hysterectomy was done for all pregnant and non-pregnant animals according to protocol of (Dawood et al., 2019; Majeed and Abood, 2019). All animals were obtained from surgical hopeless cases of accidents from many of veterinary clinics in Baghdad provenance while the non-pregnant cat was overoctomized according for desire of their owners. Euthanasia was done for all animals according for (Muna et al., 2016; Al-Falahi et al.,2017; Dhyaa, et al.,2014; Abood, and Al-Saffar 2015: Reshag et al., 2016; Abood et al., 2023). The organs of reproductive system involved left and right ovaries, left and right uterine tubes, uterus (horns and body) and the cervix were investigated in suite, and then collected from the cadaver. The morphological study involved the position, relationship, and color of each organ, also dissecting microscope were used to investigated the details of each organs. The morphometrical parameters were involved the lengths, diameters, weights of ovaries, uterine tubes, uterus and cervix. The morphometrical parameters were recorded by using digital electronic caliber and electronic

balance (Shimadzu AW320, Germany) (Dawood et al., 2019; Al-Abdula 2017; Mohammed 2017). The images were photographed by digital camera. The numerical data were analyzed by using SPSS statist version to analyze the data (Snedercor and Chochron, 1980).

Results

Non pregnant and pregnant cats

In adult non-pregnant cat, the female reproductive system was small size, located in the pelvic cavity, both ovary, uterine tubes were extended into the inlet of abdominal cavity. Female reproductive system fixed with body wall by mesometrium, mesosalpnix and mesoovrium. Dorsally the uterus was related to the rectum and ventrally with the urinary bladder, while the left and right uterine tubes were laterally to rectum (fig.1 & 2). The mean of the total length of female reproductive system (From ovaries to the end of vagina) was 14.36 ± 1.32 cm, while the mean of the total weight was 99.10 ± 0.9 g.

In pregnant cats, the ovaries, uterus, and uterine tube were occupied the abdominal in relation with small intestine, stomach and liver, ventrally to the colon (fig. 3). In most cases of pregnancy the left uterus contained 1 foetus, while the right uterus contained 2-3 foetuses (fig.3). The graved uterus involved 3 foetuses that related with corresponded discoid placentum and own umbilical cord (fig.4). During the 2nd term of the pregnancy, the total length of each discoid placentum was 8.09±1.01cm, width 2.03±0.1cm, 0.34±02mm thickness and weight 45.41±2.37g. While at the 3rd term they were 11.02±1.03cm, width 2.71±0.1cm, 0.51±03mm thickness and weight 65.81±1.69g. The mean of the total length of female reproductive system (From ovaries to the end of vagina) was 17.49±2.06cm and the mean of the total weight was 247.11±4.16g at 2^{nd} period. While those of the 3^{rd} period were 19.25±2.47cm to mean of the total weight was 273.71±5.69g. At the 2nd and 3rd periods of pregnancy, the female reproductive system of the pregnant cat enlarged in size that associated with 2-3 foetuses that filled left and right uterine cavity.

Ovaries of non-pregnant and pregnant cat

The right and left ovaries were small size, creamy colour, and oval shape. They revealed marked irregular granular surface, located in inlet of pelvic cavity during non- pregnant and extended into sub lumber region at the 2nd and 3rd periods of pregnancy. The ovary was fixed by the mesoovrium into the dorsolateral aspect of abdominal cavity and with the

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kidney by proper ligament and enclosed by a pouch of mesoovrium to form an ovarian bursa (fig. 1, 2, 5 & 6). The anterior pole of ovaries related with infundibulum, while the posterior pole attached with the cranial part of their opposite uterus (figs.6). The cortical region of the pregnant ovary revealed furthermore granular appearance that correlated with presence of many of corpus leutium and follicles (fig. 7 & 8). The statistical analysis revealed significant differences between the weight of right ovary at 3rd period of pregnant and that of non-pregnant period (Table 1).

Uterine tubes of non-pregnant and pregnant cat

In non-pregnant and pregnant cats the uterine tubes were short, less tortuous, pinkish colour, revealed marked engorged blood vessels and composed of three distinguishable segments: Cranial segment (Infundibulum), middle segment (Ampulla) and last segment (Isthmus) enclosed by mesosalpex (Fig. 2, 8 & 9). During non-pregnancy the uterine tube was located in pelvic cavity (fig.1), while during the pregnancy it was located in abdominal cavity. The statistical analysis of uterine tube revealed significant differences between the weights of pregnant periods and that of non-pregnant period (Table 2). Infundibulum was the most cranial part of uterine tube, had wide expanded membranous funnel anterior end and caudally continued with ampulla (fig.8 & 9), the of infundibulum revealed significant analysis differences between the lengths of pregnant periods and that of non-pregnant period (Table 3). Ampulla was the middle part the uterine tube, located between the infundibulum and isthmus and showed less tortuous (Fig.8 & 9), the analysis of ampulla revealed significant differences between the lengths of pregnant periods and that of non-pregnant period (Table 4). Isthmus was the segment of the uterine tube that opens at the beginning of opposite uterus (Fig.8 &9), the analysis of Isthmus revealed no significant differences between the lengths and width of pregnant periods and those of non-pregnant period (Table 5).

Uterus of non-pregnant cat

The uterus of the non-pregnant cat comprised of too long body and two long uterine horns that formed a Yshape narrow tube and had pinkish color. Uterus was completely located in the pelvic cavity (Figs. 1 & 2). The mean dimensions of uterus length, width and weight were 8.83 ± 0.33 cm, 8.11 ± 0.018 cm and $2.12\pm0.02g$ respectively for the weight of right uterus. Whereas were 8.80 ± 0.37 cm, 8.07 ± 0.19 mm and $2.09\pm0.01g$ respectively of the left uterus (Table 6). The analysis of uterus revealed no significant differences between the mean lengths, width and weight of the right and left horns (Table 6).

Uterus of pregnant cat

The uterus was composed of two huge uterine horns that filled with many of foetuses, had very thick wall, dark blue color and revealed well demarcated zones of placenta with markedly encouraged blood vessels, it extended to occupy the abdominal cavity in relation with left and right kidneys and large intestine (fig.3, 4, 5 & 6).During the 2nd term of gestation the mean dimensions of uterus length, width and weight were 12.47 ± 1.10 cm, 30.32 ± 1.19 mm and 19.52 ± 1.34 g respectively for the right uterus (Contained 2-3 foetus). Whereas were 10.19±1.02cm, 29.54±2.26mm and weight 13.45±0.10g respectively of the left uterus (Table 6). During the 3rd term the mean dimensions of uterus length, width and weight were 15.09±1.11cm, 35.65±2.09mm and 23.68±1.80g respectively for right uterus (Contained 3 foetus) and were 12.96±2.07cm, 26.11±0.06mm and 17.91±1.01g respectively for left uterus (Table 6). the statistical analysis revealed marked differences in all parameters of placentum between the 2nd and 3rd term of pregnancy.

Discussion

The female cats is small size carnivores has bicornuate uterus, this result similar that recorded in other carnivores species (Hsueh et al., 1994) in bitch and cat, (Kirberger et al., 2011; Hartman et al., 2013) in African lion. The size of cat's reproductive tract is close for some laboratory animals such as rabbits, but the cats reproductive tract nerve similar that observed in laboratory animals by Fawcett and Jensh (2002) in rabbits, Agca and Critser (2006) in rat, Ali et .al. (2010) in rat, Akinloye and Oke (2010), Yahia & Kadhim (2021) in rabbits who revealed that the rabbits had duplex uterus with two separated uterine horns, two entirely separated cervical canals. These results also observed in female genitalia of other species such as Mongolian gerbil (Almeida, 2001). Current findings revealed very short length and weight of the reproductive tract in non-pregnant cat in compared with that recorded during the 2^{nd} and 3^{rd} terms of pregnancy that showed significant increase in length and weight of reproductive tract, these increases were associated with many foetuses those filled the left and right uterine cavities and placentum content, so the female reproductive tract extended into the abdominal



cavity within abdominal viscera. These result similar those recorded by Hsueh et al. (1994) in bitch.

Our results revealed the ovaries of non-pregnant cat located in the pelvic inlet. These results are in a line with (Doğan et al., 2019) in adult Anatolian wild goat, (Doğan et al., 2021) in female red fox, (Elbably et al., 2020; AL-Delemi et al., 2010) in cat, (Hartman et al. 2013) in African lion, but in contrast with (Merkt et al. 1990) in camel and in adult Russa deer (Mahre et al., 2016) and (Ali et al., 2007) in one humped camel at which the reproductive organs are completely located in the pelvic cavity. On the other hand, in agreement with our, result of (Agca and Critser 2006) in rat who mentioned that during mid and end of gestation the ovary located in abdominal cavity. The current result suggest that the position of organ that fixed by parts of peritoneum had a feature of instable position, so they move according to the physiological status of each organs, so the ovaries has extended into the abdominal cavity during pregnancy. In agreement with (AL Delemi et al., 2010) in cat, (Ali et al., 2007; Merkt et al., 1990) in camel, (Mahre et al., 2016) in Russa deer, (Hsueh et al., 1994) in bitch the ligaments of the ovary were mesovarium and proper ovarian ligament those fixed ovary to the dorsal wall and uterine horn respectively. While another study by Miller (1964) confirmed a suspensory ligament that fixed ovary with diaphragm in a bitch.

Current results showed oval shape and more granular surface during pregnancy that paralleled result of (AL-Delemi et al., 2010) in cat, (Ali et al., 2007; Merkt et al., 1990) in camel, (Hsueh et al., 1994), while Machado et al. (2017) in fox stated bean shape ovary and Findly et al., (2009) stated an ellipsoid shape ovaries in most domesticated animals, while ovaries of Anatolian wild goat show almond shape (Doğan et al., 2019). The shape of the ovary is related with species variation. The appearance of the surfaces of ovaries is smooth that associated with absence of follicular activity (Mahre et al., 2016). The present findings showed no significant differences among length, width and weight of the right and left ovaries, during periods of non-pregnancy and those of pregnancy, except that the right ovary weight during the third period of pregnancy is significantly higher than that of the first and second periods (tab.1). Okoye et al. (2017) in Maradi female goats also stated no significant variation across the terms of gestation except in the right ovary length during the third term of gestation is significantly higher than that of the first term, while report of Mahre

et al. (2016) in adult Russa deer stated a significant difference between the length and width of both right and left ovaries, the left ovary is slightly larger than the right ovary, also pregnant cat the increase of ovarian size was reported by AL-Delemi et al. (2010) and (Elbably et al., 2020) in cat. The difference in results of other authors could be related with hormonal effect of each animal species. On the other hand Merkt et al., (1990) has stated that the ovarian size and weight are influenced by the age and by the phases (During resting phases the ovary weighs is about 4-5g and during pregnancy is weighing 5.5 to 8 g).

The present morphometrical data revealed very small size ovaries in cat in compared with other species, the length, width and weight of cats' ovaries were ranged (from 10.01-11.25mm, 5.2-6.5mm and 0.7-0.91g) respectively. These data were less that that recorded in red fox by (Doğan et al., 2021), in adult Anatolian wild goat by Doğan et al. (2019), in bitch by Hsueh et al. (1994), in lion Africa by Hartman et al. (2013), Merkt et al. (1990) in non-pregnant Arabian camel. On the other hand, the present finding showed that the right ovary had larger size than that of the left one, this result compatible with result of (Hsueh et al., 1994) in bitch and cat who mentioned that in both species seldom the left ovary larger than the right.

The present finding of non-pregnant and pregnant cats' revealed that the uterine tubes was very short, pinkish color and comprised of three segments. This result agree with result mentioned by Dyce et al. (2010) in bitch and cat, Doğan et al. (2019) in Anatolian wild goat, Mahre et al. (2016) in Rusa deer, in camel by Merkt et al., (1990), Yahia and Kadhim (2021) and Abdullah (2019) in rabbit. The infundibulum has a private shape, the neck of infundibulum control the abdominal ostium of oviduct and the funnel part of infundibulum is optimized with the first function of oviduct that to capture the ovum (Lyons et al., 2006). During both non-pregnancy and pregnancy the longest segment of uterine tube was the ampulla, whereas the isthmus is shorter. These differences may be due to different possible events which take place in ampulla, the longest length of ampulla gave greater chance for the fertilization of the male gametes from the pre ampulla but the largest diameter of isthmus may give a chance for the storage huge number of spermatozoa (Yahia and Kadhim 2021; Ozen et al., 2010).

During period of non-pregnancy the uterine tube was located in pelvic cavity, while during the pregnancy it was located in abdominal cavity, this result suggest



that the position is related with status of increase in size of reproductive tract during pregnancy. The current result of pregnancy is consistence with result of Bitto et al. (2006) in rabbit and Devi et al. (2017) in human. The current finding showed that the uterine tubes was changed position and development of the fetuses related with the increasing in fetuses sizes as the pregnancy progresses, this result is consistence with result of Devi et al. (2017) who showed that fallopian tube is highly flexuous and convoluted during reproductive ages. The current finding revealed less tortuous uterine tube in cat, such result are disagree with that recorded by Doğan et al. (2019) in Anatolian wild goat, Mahre et al. (2016) in female of Rusa deer, Merkt et al., (1990) in camel, whom mentioned for highly convoluted tube. This result suggests that the highly convoluted status of uterine is related with time that require for the developmental events of zygotes during passage in the lumen of uterine tube which related with species variation.

The present morphometrical results confirmed very small size uterine tube in cat in compare with other species, the length and width of cats' uterine tube were ranged (30.23-32.56mm, and 4.80-5.12mm) respectively. These results were lower that recorded by Doğan et al. (2019) in Anatolian wild goat, Dyce et al. (2010) in bitch, Adigwe & Fayemi (2005) in Red Sokoto (Maradi) goats, Merkt et al. (1990) in she camel, Abdullah (2019) in rabbits. The current study revealed that the right uterine always larger than that of left once. This result similar that recorded by Doğan et al. (2019) in Anatolian wild goat, Adigwe & Fayemi (2005) in Red Sokoto (Maradi) goats. This result suggests that this difference could be related with activities of the corresponding ovaries and hormonal affection. Our result also showed significant differences between the weight of uterine tube of pregnant and that of non-pregnant cat (Table 2). The length of the infundibulum and ampulla also were revealed significant differences between the pregnant and non-pregnant cat (Table 3 & 4). These results suggest that this difference could be related with activities of the corresponding ovaries and hormonal affection.

According for the current study, the uterus of female cat was bipartite type as that observed in other carnivorous species (Elbably et al., 2020). This result is dissimilar that observed in camel which has bicornuate uterus (Merkt et al., 1990) and that observed in pregnant Maradi female (Okoye et al., 2017). Our results confirmed too long uterine body with marked long Y-shape uterine horn that similar with that observed in camel by Merkt et al. (1990), Hsueh et al. (1994) in bitch, Elbably et al., (2020) in cats and Ishaya et al., (2018), while the uterus of cows is cornuate type (Khaton et al., 2015) and in she camel has a letter T shape with left horn longer than the right one (Srikanda-kumar et al., 2003), a very small uterine body and two short horns are seen in Rusa deer by (Mahre et al., 2016) and in West African dwarf female goat by (Abiaezute et al. 2018). The current finding revealed non-pregnant uterus located in pelvic cavity, while during pregnancy completely occupies the abdominal cavity. This result accords with that mentioned by Dyce et al. (2010), Merkt et al. (1990), Okoye et al. (2017) and Elbably et al., (2020) in nonpregnant cat. This change in position of uterus was related with advance increase in weight and size of the uterus especially during mid and late gestation (Okoye et al., 2017). The color of uteri of non-pregnant cat was pink which differed from that observed during pregnancy (dark), this was associated with high vascularization of uteri during pregnancy especially at area of zonary placentum. The current morphometrical results revealed significant variations between the right uterine length, weight, weight and the left uterine horn at 2nd and 3rd periods of pregnancy, also there were significant variations between these parameters among periods (Tab.6), such results disagree with result of Okoye et al. (2017) who referred for no variations between the left uterine length and the right uterine horn, except the mean length in the third term of gestation in which the left uterine length is significantly shorter than that of the right one. (Okoye et al.,2017).

The current finding showed no significant variation between the right and left uterus length, width and weight in non-pregnant cat. This result agree with result recorded by Abiaezute et al.(2018). our result revealed that the mid and late terms of pregnancy revealed graduation growth of uterus which associated with significant increase (P \leq 0.05) in the lengths, width and weights of uterine horns has explained by Chen and Dziuk (1993) who exhibited variation between animal species in the length of uterine horns which could be attributed for ability of the uterus to provide nutrients for foetuses during pregnancy. The growth of uterus is similar to that recorded in small ruminants by Bukar et al. (2006), Hayashi et al. (2008) who refereed for constant increase in size of uterus that associates



with the increase of endometrial glands in addition for proliferation of stromal cellular components. Our finding in pregnant cat showed that left uterine horns had one embryo while the left had two-three embryos separated by marked constriction in between. this result dissimilar that reported by (Elbably et al., 2020) mentioned two embryos in both horns, (Brookshire et al., 2017) in a pregnant cat mentioned only the right uterine horn had two foetuses, (Srikandakumar et al., 2003) as in pregnant she-camel, cow and ewe that fetus presents only in the single uterine horn; while in while in a mare and primates it occurred.

Current result showed that the length, width and weight of uterus in non-pregnant were ranged from (8.80-8.83cm, 8.07-9.11 mm & 2.09-2.12 g) respectively. These result were lower from those recorded by other authors in female of Rusa deer (Mahre et al., 2016), in female of wild African lion (Hartman et al., 2013), in camel (Merkt et al., 1990). On the other hand, in Egyptian cat the uterine horn measured (3-4cm) in length and a short body (0.5-1cm) and the uterine horn increased in length in the pregnant cat reached 5-6 cm (Elbably et al., 2020). The cats uterus completely separated as observed by ((Elbably et al., 2020) and don't connected by inter corneal ligament as well as that present in small and large ruminants such as west African dwarf goat (the left and right uterine horns joined with the uterine body and fixed by interconual ligaments (Abiaezute et al., 2018). Our study revealed smooth mucosal surface of uterus as well as that mentioned by Dyce et al. (2010) in bitch and cat. This result dissimilar that observed in female of wild African lion that showed few mucosal longitudinal folds in body of uterus and horns (Hartman et al., 2013), Merkt et al.(1990) in camel mentioned that the endometrium has irregularly longitudinal folds which are more conspicuous in the right horn. this differences were associated with species variation.

Conclusion

According to the current to the finding of anatomical and morphometrical investigation the ovaries showed no marked differentiate between non-pregnant and pregnant adult local breed cat and main differences were limited in the uterine tubes and mostly in the uterine horns. The zonary placentum of pregnant cat was limited with part of endometrium that showed differences between periods of pregnancy which could be the best model for human studies.

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Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this manuscript.

Stage	Length/mm		Width/mm		Weight/g.	
	Right ovary	Left ovary	Right ovary	Left ovary	Right ovary	Left ovary
Non pregnant	11.04±0.11	10.01±0.02	6.03±0.39	5.2±0.28	0.81±0.10	0.72±0.40
Pregnant 2 nd period	11.09±0.09	10.18±0.04	6.04±0.31	5.8±0.28	0.95±0.09	0.81±0.40
Pregnant 3 rd period	11.25±0.9	11.01±0.07	6.28±0.12	6.09±0.32	1.80±0.09*	0.91±0.06
LSD	NS	NS	NS	NS	0.99	NS

Table 1: Shows lengths, widths and weights of the ovaries during periods of non-pregnancy and pregnancy.

 Table 2: Shows lengths, widths and weights of the whole uterine tube during periods of non-pregnancy and

р	regnancy.

Stage	Length/mm		Width/mm		Weight/g.	
	Right tube	Left tube	Right tube	Left tube	Right tube	Left tube
Non pregnant	30.12±0.11	30.23±0.31	4.82±0.07	4.80±0.08	0.26±0.09	0.26±0.07
Pregnant 2 nd period	32.26±0.18	31.98±0.03	5.10±0.06	5.08±0.08	1.11±0.09	1.09±0.40
Pregnant 3 rd period	32.56±0.47	32.11±0.08	5.12±0.12	5.11±0.4	1.80±0.09*	1.69±0.06*
LSD	NS	NS	NS	NS	1.54	1.43

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JCHR (2023) 13(5), 995-1007 | ISSN:2251-6727



Table 3: Shows lengths, widths and weights of the infundibulum during periods of non-pregnancy and

		pregnancy.		
Stage	Length/mm		Width/mm	
	Right side	Left side	Right side	Left side
Non pregnant	5.72±0.12	5.81±0.07	8.10±0.21	8.08±0.08
Pregnant 2 nd period	7.37±0.19*	7.41±0.29*	8.12±0.09	8.09±0.12
Pregnant 3 rd period	7.37±0.21*	7.36±0.06*	8.11±0.08	8.11±0.06
LSD	2.35	1.6	NS	NS

Table 4: Shows lengths, widths and weights of the ampulla during periods of non-pregnancy and pregnancy.

Stage	Length/mm		Width/mm		
	Right side	Left side	Right side	Left side	
Non pregnant	12.19±0.15	12.17±0.11	5.09±0.26	5.03±0.31	
Pregnant (2 nd period)	15.81±0.59*	15.41±0.85*	6.36±0.14	6.98±0.12	
Pregnant (3 rd period)	15.86±0.21*	15.42±0.06*	6.35±0.09	6.81±0.06	
LSD	3.62	3.24	NS	NS	

Table 5: Shows lengths, widths and weights of the isthmus during periods of non-pregnancy and pregnancy.

Stage	Length/mm		Width/mm		
	Right side	Left side	Right side	Left side	
Non pregnant	3.91±0.26	3.87±0.24	3.11±0.05	3.09±0.33	
Pregnant (2 nd period)	3.99±0.40	3.92±0.19	3.61±0.08	3.16±0.12	
Pregnant (3 rd period)	4.01±0.21	3.90±0.10	3.60±0.11	3.17±0.09	
LSD	NS	NS	NS	NS	

 Table 6: Shows lengths, widths and weights of the uterus during periods of non-pregnancy and pregnancy.

Stage	Length/cm		Width/mm		Weight /g	
	Right horn	Left horn	Right horn	Left horn	Right horn	Left horn
Non pregnant	8.83±0.33	8.80±0.37	8.11±0.18	8.07±0.19	2.12±0.02	2.09±0.01
Pregnant (2 nd period)	13.47±1.10*	11.19±1.22 *	30.32±1.91*	27.54±2.26*	19.52±1.34*	13.45±0.90*
Pregnant (3 rd period)	16.09±1.11*	14.96±2.07*	35.65±2.09*	32.11±0.06*	23.68±1.80*	17.91±1.01*
LSD	6.26	4.16	22.12	18.04	17.4	11.36

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Figure 1: Macrophotograph of adult non-pregnant cat show: abdominal muscle (W), left uterine horn (Lu), right uterine horn (Ru), uterine body (B), cervix (C) vagina (V) left ovary (Black arrow), right ovary (Red arrow), fallopian tube (blue arrow), small intestine (I), stomach (St), mesometrium (Brown arrow), left kidney (k1), right kidney (R2).



Figure 2: Macrophotograph of genial system of adult non-pregnant cat show : left uterine horn (L), right uterine horn (R), uterine body (B), cervix (C,) vagina (V), right uterine tube (Red arrows), left uterine tube (yellow arrows), & mesometrium (M), left ovary (1) & right ovary (2).

www.jchr.org JCHR (2023) 13(5), 995-1007 | ISSN:2251-6727





Figure 3: Macrophotograph cadaver of adult pregnant cat (3rd term) show: Graved left uterine horn (Lu), Graved right uterine horn (Ru), uterine body (B), cervix (C,), jejunum (J), & stomach (St).



Figure 4: Macrophotograph of graved uterus (3rd term) show: umbilical cord (Black arrows), zonary placentum (Red arrows) uterine horn (Blue arrow), & embryos (Asterisk).



Figure 5: Macrograph of adult non pregnant cat shows: ovary (Asterisk), right uterine horn (U),), isthmus uterine junction (Blue arrow), mesosalpenix with uterine tube (Red arrow), proper ligament (Black arrow), intestine (C), right kidney (K).

www.jchr.org JCHR (2023) 13(5), 995-1007 | ISSN:2251-6727





Figure 6: Macrograph of ovary of adult pregnant cat shows: graved uterus (U), anterior pole (Black arrow), posterior pole (red arrow), ventral border (yellow arrow), dorsal border (Blue arrow) with clear corpus letium & mesoovrium (Asterisk).



Figure 7: sagittal section through the ovary of adult non pregnant cat shows cortex (C,) medulla (M) & variable sized of follicles (Asterisks).



Figure 8: Macrograph of reproductive system of adult pregnant cat shows: ovary with anterior pole (Red arrow), dorsal border (Blue arrow) posterior pole (Black arrow), ventral border (Yellow arrow), infundibulum (F), ampulla (A), & isthmus (I) & uterus (asterisk).







Figure 9: Macrograph of genital system of adult non pregnant cat shows: Ovary (Asterisk), uterine horn (U), narrow isthmus (yellow arrow), ampulla (Red arrow), membranous infundibulum (Black arrow), mesosalpenix (M).