

Gross and Histopathological Study of the Genitalia in Goats: 2. Tubular Genital Organs (Uterine tubes and Uterus)

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Abstract

The aim of this study was to detect the microscopic and macroscopic lesions in uterine tubes and uterus in Sulaimani abattoir, Kurdistan region/Iraq. The total samples collected were 340 genitalia of does of pregnant and non-pregnant. 37.05% (126/340) of the samples were pregnant and 37.35% (127/340) of the samples were observed without gross lesions and 2.23% (10/340) were noticed with uterine tube gross abnormalities and the remaining 34 (12.941%) samples were recorded as anatomical lesions and pathological lesions of uterus. The a numbers of uterine tubes abnormalities were 11 out of 340 specimens (3.235%), and the most common lesions were; salpingitis 6 cases (7.64%); 1 case from each of hydrosalpinx and Pyosalpinx, respectively (0.294%). Microscopically, the lesions of salpingitis were sloughing off the part of the epithelium and infiltration of inflammatory cells. Three specimens of cyst on uterine tubes (0.882%). The numbers of uterine lesions were 44 specimens which shared 12.941% of abnormalities out of the 340 collected specimens. The most common diseased genital cases were; endometritis and metritis which 21 cases (6.176%), which were histopathologically characterized by a significant increase in the endometrial thickness due to diffuse infiltration of inflammatory cells mainly lymphocytes, the proliferation of fibroblasts with deposition of extracellular matrix. Five pyometra (1.470%), which was histopathologically characterized by definite increase in the uterine wall thickness, especially in the endometrium due to infiltration of light pinkish fibrinous inflammatory exudates with mild inflammatory cell proliferation. Three Hydrometra specimens (0.882%), and five endometrial cystic hyperplasia (1.470%). The microscopic lesions for them include massive cystic dilatation of the uterine gland that contains pinkish granular secretion, infiltration of light pinkish edematous fluid in the endometrial stroma associated with inflammatory cells. Two specimens of uterine wall with cysticercus tenuicollis (0.588%), and one uterine melanoma (0.294%), The histopathological features for the uterine melanoma include; deposition of the dark black melanin pigment within the phagocytic cells. Uterine leiomyosarcoma was one specimens (0.294%), which histologically, appear as pleomorphic cells variable in shape and size with different nuclear size randomly oriented in different directions, some of these cells were hyperchromatic with an abnormal mitotic figure. One case of cyst on the uterine wall was found (0.294%), and five cervicitis (1.470%). Finally, it could be concluded that uterine tubes, and uterus abnormalities constitute a percentage (3.235%, and 12.941%), respectively. In this study, uterine melanoma, and uterine leiomyosarcoma were firstly recorded in this study in Iraq and Kurdistan region.

Keywords: Gross, Histopathological, Genitalia, Goats

دراسة عيانية ونسجية للأعضاء التناسلية في الماعز: 2. الأعضاء التناسلية الأنثوية (أنابيب الرحم والرحم)

الخلاصة

الهدف من هذه الدراسة كان الكشف عن الآفات العيانية والمجهرية لأنابيب الرحم في الماعز المذبوحة في مجزرة محافظة السليمانية -

إقليم كردستان العراق. من بين 340 عينة تم جمعها من الحيوانات الحوامل وغير الحوامل، منها 126 حاملاً (37.058%). و127 حالة منها بدون تشوهات مرضية إجمالية (37.35%)، و 10 (3.235%) تم العثور عليها مع تشوهات إجمالية ومرضية لأنابيب الرحم. وتم تسجيل العينات الـ 34 المتبقية (12.941%) على أنها آفات الرحم الجسدية والمرضية. كان عدد حالات تشوهات الأنابيب الرحمية 11 من أصل 340 عينة (3.235%)، وكانت الآفات الأكثر شيوعاً هي؛ التهاب البوق 6 حالات (7.64%)؛ حالة واحدة من كل من hydrosalpinx و Pyosalpinx، على التوالي (0.294%). مجهرياً، كانت آفات التهاب البوق تنزف من الجزء الظهاري وتسلل الخلايا الالتهابية. عينات أشجار الكيس على أنابيب الرحم (0.882%). بلغ عدد آفات الرحم 44 عينة تشاطر 12.941% من الحالات الشاذة من بين 340 عينة تم جمعها. وكانت أكثر الحالات التناسلية المريضة شيوعاً؛ التهاب بطانة الرحم و metritis الذي 21 حالة (6.176%)، والتي تميزت النسيجية بزيادة كبيرة في سمك بطانة الرحم بسبب انتشار تسلل الخلايا الالتهابية بشكل رئيسي الخلايا الليمفاوية، وانتشار الخلايا الليفية مع ترسب المصفوفة خارج الخلية. خمسة pyometra (1.470%)، والتي تتميز بالهستولوجيا تتميز بزيادة واضحة في سمك جدار الرحم، خاصة في بطانة الرحم بسبب تسلل الإفرازات الالتهابية الليفية الوردية الخفيفة مع تكاثر الخلايا الالتهابية الخفيفة. ثلاث عينات هيدروميتر (0.882%) وخمس تضخم بطانة الرحم الكيسي (1.470%). تشمل الآفات الميكروسكوبية توسعها الكيسي الضخم في غدة الرحم التي تحتوي على إفراز حبيبي وردي، وتسلل سائل ذكري وردي فاتح في سدى بطانة الرحم المرتبط بالخلايا الالتهابية. عينتان من جدار الرحم مع 0.588 cysticercus tenuicollis (%، وسرطان الرحم واحد (0.294%)، وتشمل السمات النسيجية لسرطان الجلد؛ ترسب صبغة الميلانين السوداء الداكنة داخل الخلايا البلعمية. كانت ساركومة الرحم العضلي العظمي واحد (0.294%)، والتي تظهر تشريحياً كخلايا متعددة الأشكال ومتغيرة في الشكل والحجم مع حجم نووي مختلف موجه بشكل عشوائي في اتجاهات مختلفة، وكانت بعض هذه الخلايا مفرطة اللون مع شكل انقسام غير طبيعي. تم العثور على حالة واحدة من الكيس على جدار الرحم (0.294%)، وخمسة من عنق الرحم (1.470%). وأخيراً، يمكن استنتاج أن أنابيب الرحم وتشوهات الرحم تشكل نسبة مئوية (3.235% و 12.941%) على التوالي. في هذه الدراسة، تم تسجيل الورم الميلانيني الرحمي وساركومة عضلة الرحم الرحمية وهي تسجل لأول لها في العراق وإقليم كردستان.

Introduction

Goats in Kurdistan plays on important role in the economy to the farmers, it provides several products including milk, meat, skin and mohair and cashmere fibers (1,2). Goats reproduction of great importance to the farmers because of it's high fertility and can produce a numbers of kids (3,4). Therefore, pathological lesions of reproductive system had a great effect on it's reproduction (5). Goat is seasonal short day breeder. There are several factors effecting seasonality

including; climate, physiological status, breed, photo peridiosis, system of breeding and presence of buck (6). Generally, breeding season begins in autumn and determined at winter while it's anestrus at spring and summer (7).

There is a little work about goat reproduction in Kurdistan province. The pathological lesions in goat genitalia leads to reduce fertility to a various conditions. There is also a little informaitons about prevalence and the nature of these pathological lesions in Sulaimani province (4). Investigation of abattoir samples offers a vast amount of informations on the abnormalities of reproductive organs (8). These informations are very important for the diagnosis, control and treatment of infertility and low productivity (9). The anatomical and pathological lesions have been reviewed and investigated by several authers (10,11). The study showed that the anatomical lesions in pregnant and non-pregnant does were 14.63% (5). It has been observed in sulaimani slaughterhouse, the prevalence of anatomical lesions in non-pregnant doe genitalia were 16% while in pregnant doe

genitalia were 9.42% (12). It has been reported that inflammation of uterine tube (salpingitis) is the most common detected condition with a prevalence of 11.11% from uterine tubes lesions in the region of sulaimani (12). while in the Iraqi goats, the percentage was 3.4% which is recorded by (5). The incidence of hydrosalpinx in Uganda was 3.8% (13). The prevalence of pyosalpinx in different studies is about 1-4% of total reproductive abnormalities (9, 12). The percentages of endometritis and metritis were 6% recorded by (12), and 0.31% observed by (13). The incidence of hydrometra was as high as 14.13% of uterine abnormalities (15).

The current work was aimed to know the histological and anatomical lesions of uterine tube and uterine lesions in does slathered at sulaimani slaughterhouse-Kurdistan,Iraq.

Materials and Methods

A total of 340 goat genitalia were collected from "Qaragol" abattoir in sulaimani province. It was collected during the period from September 2014 to June 2015. There is no information available about the samples collected. The samples were transferred to the lab. and separated to clear the genital organs for good examination. Uterine tubes were freed from mesosalpinx and straightened.

The patency of uterine tubes assessment are carried out according to the method of (16), by injecting coloured fluid (methylene blue 1%) at their junction with uterine horns of both right and left sides of the tubes. The uterine tubes were graded and arranged according to their occlusion (partial

occlusion; obstructed)(17). The uterine tubes opened by midline incision and examined for inflammation, presence of pus and another lesion like cysts on the tubes were recorded. Fixation of tissue samples were done with 10% buffered formalin in a plastic container for histopathological examination.

Investigation of the macroscopical abnormalities of the uterus was diagnosed, recorded and photographed by a digital camera. Then the horns of the uterus were isolated with sharp cut and freed from ligaments and whole length were extended. The uterine horns were incised at the dorsal surface to expose the lumen. The uterine body were also incised dorsally to expose the cervical canal and vagina. A section of approximately 2cm in length, obtained from affected horns, were separated and fixed in a plastic container that contained 10% neutral buffered formalin for histological examination (44).

Results and discussion

Out of 340 genitalia collected 37.05% (126/340) were pregnant and 37.35% (127/340) were observed having no pathological lesions and 3.23% (10/340) samples were have anatomical and pathological lesions in the uterine tubes and the remaining 34 (12.941%) samples were recorded as gross and pathological lesions of uterus, in table (1, 2).

Table 1: Anatomical lesions of uterine tubes in does genitalia in sulaimani slaughterhouse .

Pathological abnormalities		Right Side No.	Left Side No.	Both side No.	Total No.	Percent. N=11	Percent. N=127	Percent. N= 340
1	Salpingitis	2	0	4	6	54.54	4.72	1.76
2	Hydrosalpinx	0	0	1	1	9.09	0.78	0.29
3	Pyosalpinx	0	0	1	1	9.09	0.78	0.29
4	Cyst on uterine tubes	1	1	1	3	27.27	2.36	0.88
5	Total	3	1	7	11	100	8.66	3.23

Table 2: Gross pathological abnormalities of uterus of does 'genitalia in the Sulaimani abattoir

Pathological abnormalities	Total No.	Abnormalities N=44	Percent. N=127	Percent. N=340
1	Endometritis and metritis	21	47.72	16.53
2	Pyometra	5	11.36	3.93
3	Hydrometra	3	6.81	2.36
4	Endometrial cystic hyperplasia	5	11.36	53.93
5	Uterine wall with cysticercus tenuicollis	2	4.54	21.57
6	Uterine melanoma	1	2.27	0.78
7	Uterine leiomyosarcoma	1	2.27	0.78
8	Cyst on the uterine wall	1	2.27	0.78
9	Cervicitis	5	11.36	3.93
10	Total	44	100	34.64



Figure 1: A photograph of uterine tube illustrates, thickening of the wall and contain turbid fluid (Hydrosalpinx).

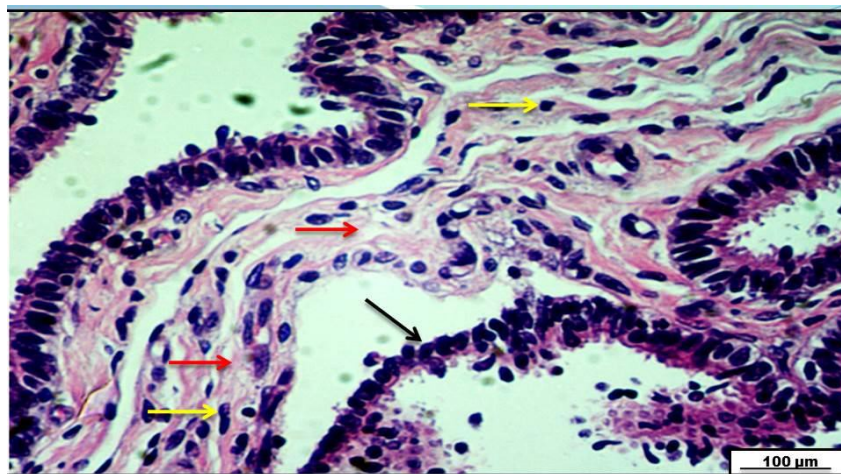


Figure 2 : Photomicrograph of uterine tube shows mild to moderate infiltration of chronic inflammatory cells mostly lymphocytes within the subepithelial fibromuscular stroma (yellow arrows). Focal sloughing of the lining epithelium (black arrow). H&E. Scale bar: 100 μm.



Figure 3: A photograph of uterine tube illustrates, the uterine tube partially thickened and filled with pus (Pyosalpinx).

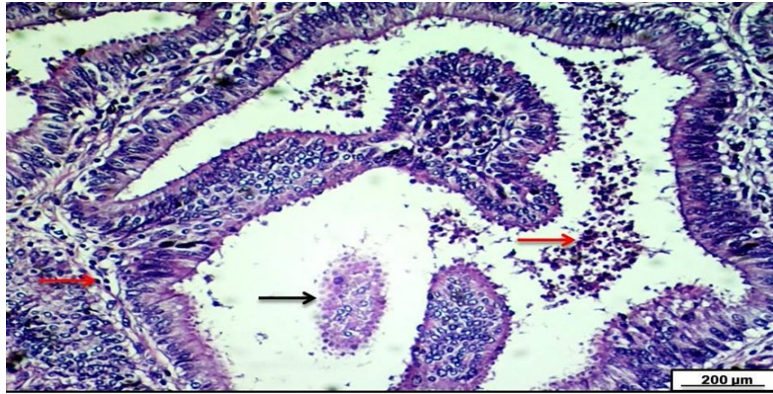


Figure 4: Photomicrograph of uterine tube shows moderate infiltration of inflammatory exudate in the uterine tube lumen (black arrow). H&E. Scale bar: 200 μm .



Figure 5: A photograph of doe's genitalia shows para-tubal cyst (cyst on the uterine tubes), the cysts are bilateral.

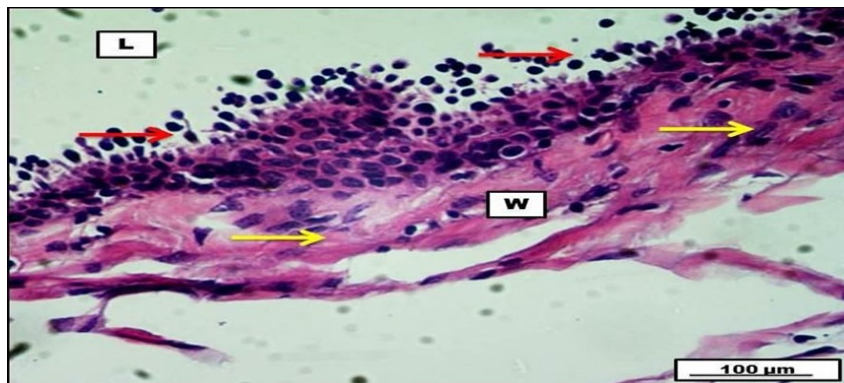


Figure 6: Photomicrograph of uterine tube demonstrates a fibromuscular wall of a cyst (yellow arrows). The lining epithelial layer of the cyst consists of pseudostratified cuboidal epithelium (red arrows). Furthermore, the cyst is connected to the uterine tube wall. L: Cystic lumen; W: Cyst wall. H&E. Scale bar: 100 μm .

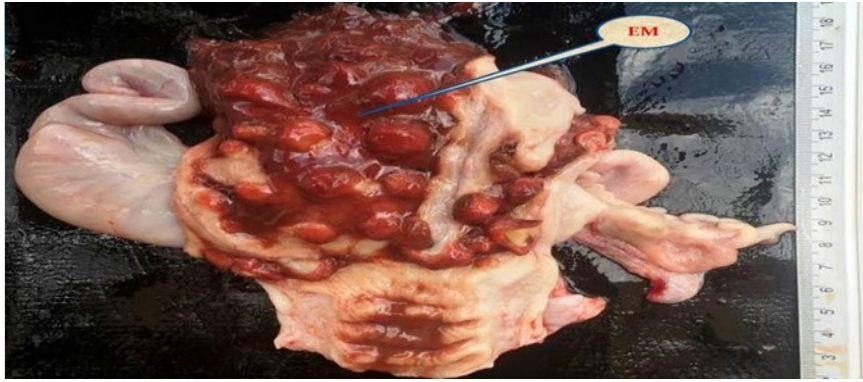


Figure 7: A photograph of uterus shows deep red to brown pus in the Lumina (Endometritis).

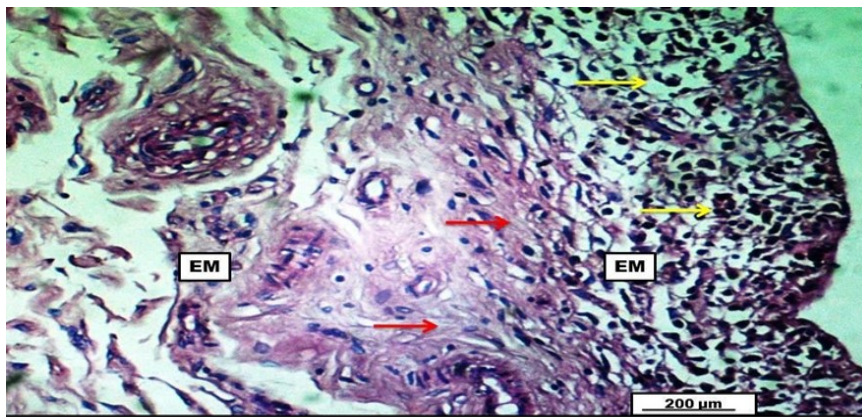


Figure 8: Photomicrograph of uterus displays a considerable increase in the endometrial thickness due to the diffuse infiltration of chronic inflammatory cells mainly lymphocytes (yellow arrows). The proliferation of some fibroblasts with the deposition of an extracellular matrix within the endometrium (red arrows). EM: Endometrium. H&E. Scale bar: 200 μm.

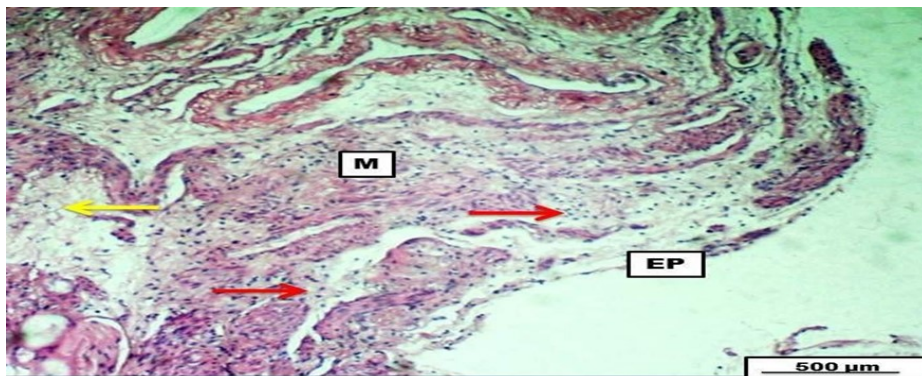


Figure 9 : Photomicrograph of uterus illustrates great increase in uterine wall thickness, especially in the myometrium and perimetrium due to the diffuse infiltration of inflammatory exudate (red arrows). M: Endometrium; EP: Epimetrium. H&E. Scale bar: 500 μm.

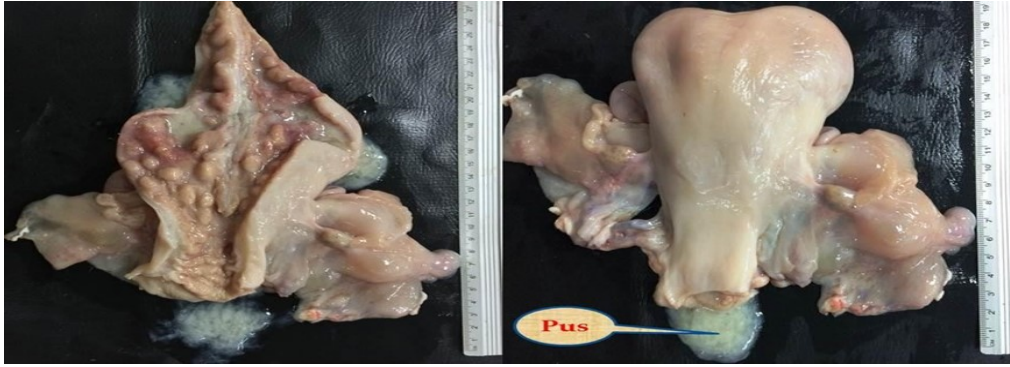


Figure 10: A photograph of the doe's genitalia illustrates enlargement of the uterus which filled with thick pus. (Pyometra).

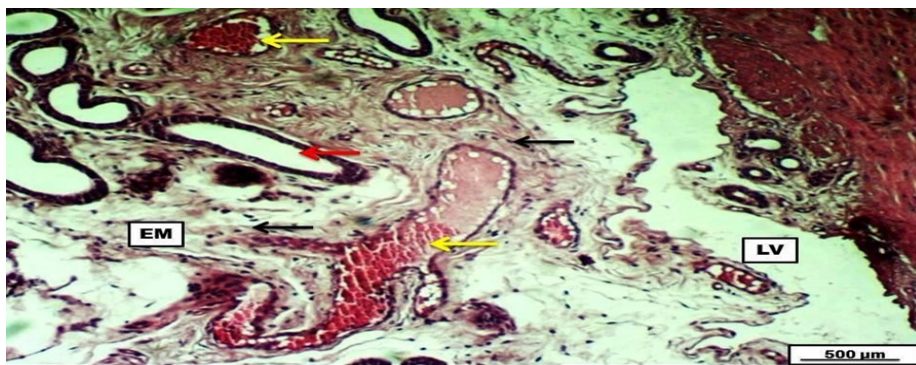


Figure 11: Photomicrograph of uterus illustrates a definite increase in uterine wall thickness, especially in the endometrium due to infiltration of light pinkish fibrinous inflammatory exudate with mild inflammatory cells proliferation (black arrows). Congestion and dilatation of endometrial blood vessels (yellow arrows). Distinct dilation of uterine glands (red arrow) EM: Endometrium; LV: dilated lymphatic vessel. H&E. Scale bar: 500 μ m.

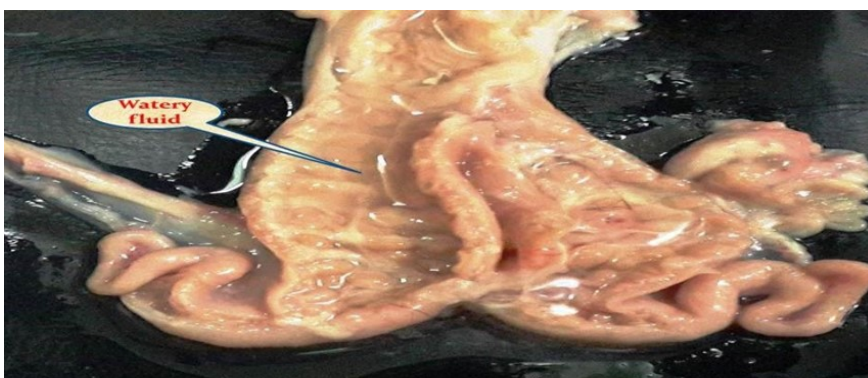


Figure 12: A photograph of Uterus which is distended with watery fluid. (Hydrometera).

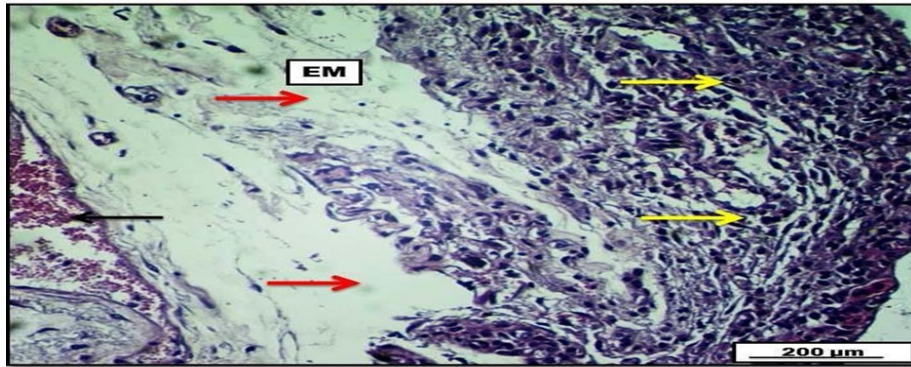


Figure 13: Photomicrograph of the uterus shows diffuse subepithelial infiltration of inflammatory exudate mixed with chronic inflammatory cells mostly lymphocyte (yellow arrows). The presence of edematous fluid in the endometrial stroma (red arrows), together with congestion of endometrial blood vessels (black arrow). EM: Endometrium. H&E. Scale bar: 200 μ m.

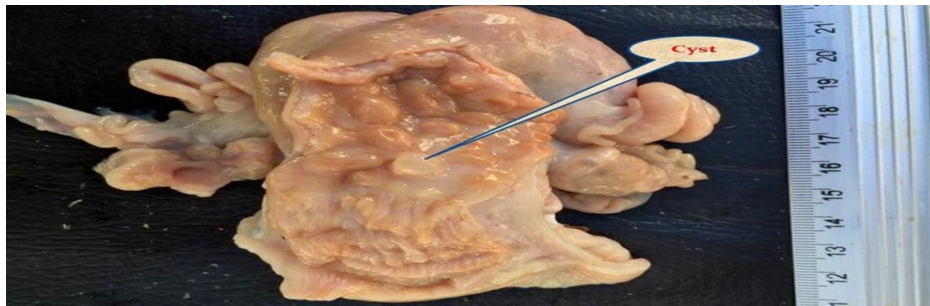


Figure 14: A photograph of the doe's genitalia demonstrates cystic hyperplasia of the endometrial glands.

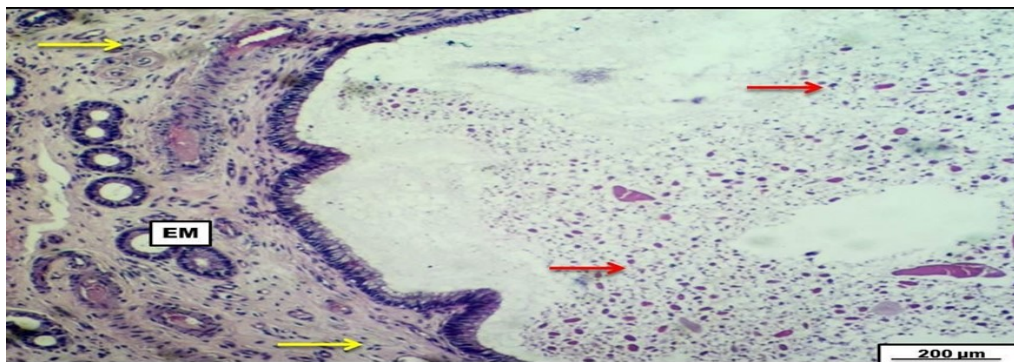


Figure 15: Photomicrograph of uterus shows massive cystic dilatation of the uterine glands that contains purplish granular secretion (red arrows). Infiltration of light pinkish edematous fluid in the endometrial stroma associated with inflammatory cells (yellow arrows). EM: Endometrium. H&E. Scale bar: 200 μ m.

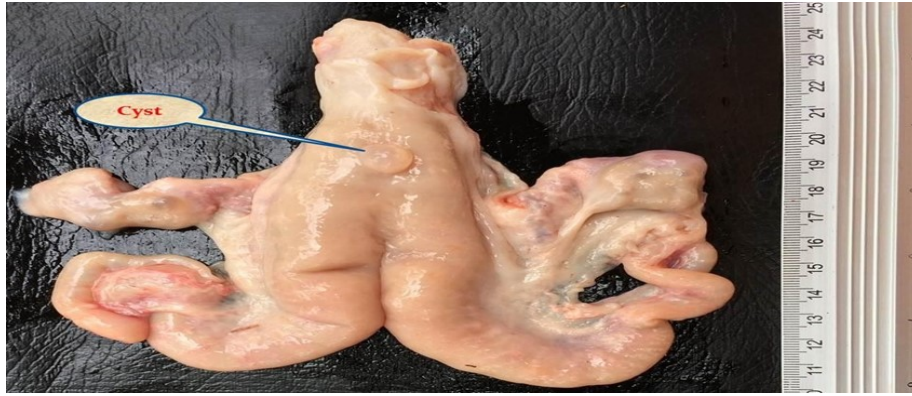


Figure16: A photograph of the doe's genitalia shows extramural cyst protruded dorsally.

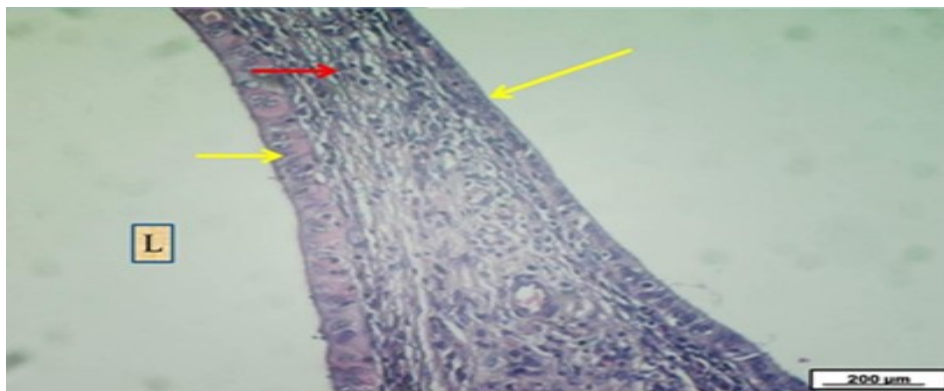


Figure 17: Photomicrograph of uterus shows a cyst on the uterine wall, the wall of the cyst is composed of cuboidal epithelial layer (yellow arrow) and a layer of fibrous connective tissue (red arrow) L: lumen of the cyst. H&E. Scale bar: 200 μm

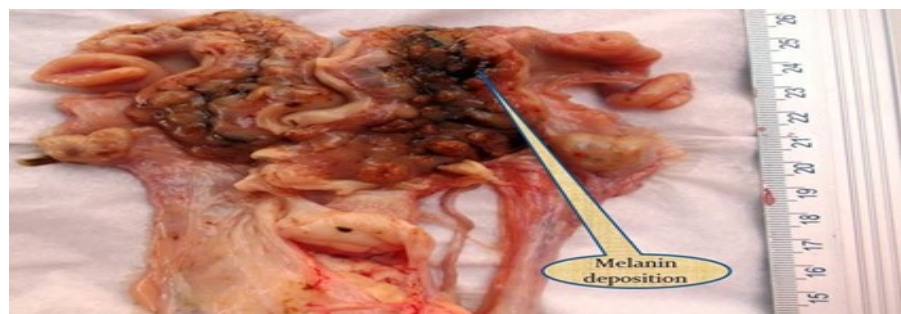


Figure 18: A photograph of uterus demonstrates deposition of the melanin pigments in the endometrium. (Uterine melanoma).

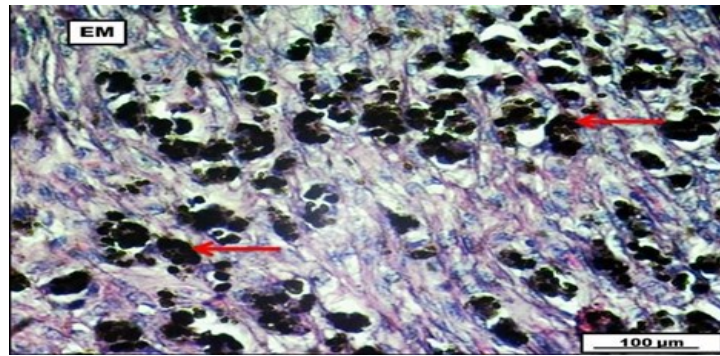


Figure 19: Photomicrograph of the uterus with higher magnification demonstrates deposition of dark black melanin pigment within the phagocytic cells (melanophorus), which is distributed diffusely within the endometrial stroma (red arrows). EM: Endometrium. H&E. Scale bar: 100 μ m.

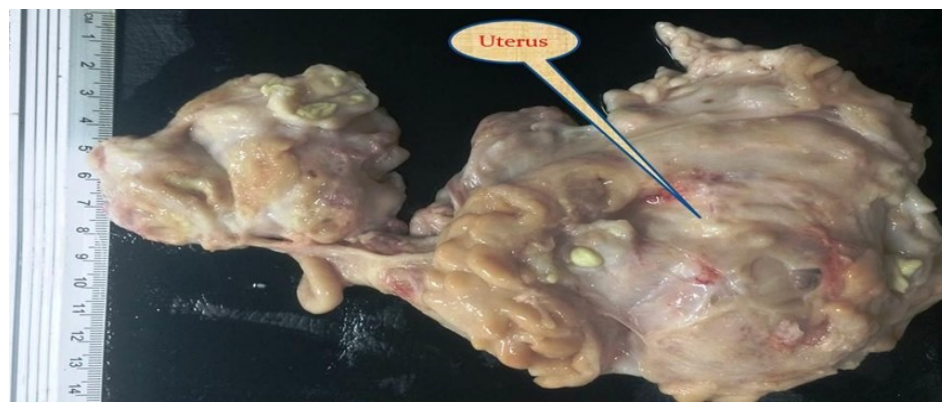


Figure 20: A photograph of doe's genitalia reveals greatly enlarged uterus with multigranular variable sized lesions. (Uterine Leiomyosarcoma).

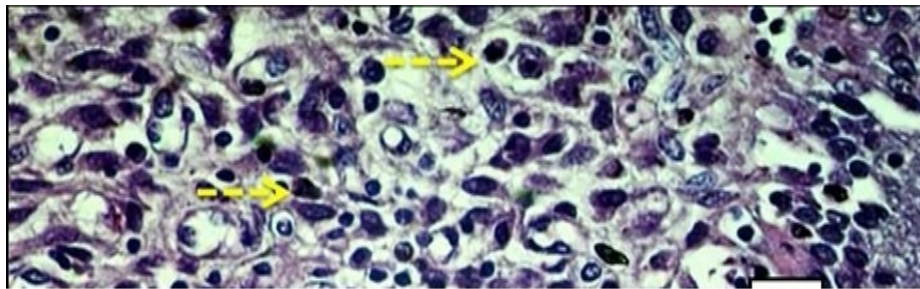


Figure 21: Photomicrograph of the uterus demonstrates presence of pleomorphic cells variable in shape and size with different nuclear size randomly oriented in the different directions (yellow arrows). Some of these cells are hyperchromatic with the abnormal mitotic figure (dashed yellow arrows). These pleomorphic cells are associated with chronic inflammatory cells mainly lymphocytes (red arrows). EM: Endometrium. H&E. Scale bar: 100 μ m.

The current study showed that the most common pathological abnormalities occurred in uterine tube and uterus in does slathered in sulaimani abattoir Tables (1& 2). The total percentage of uterine tubes lesions were 11 (3.235%) which found in 10 genitalia. This findings was also agrees with the results of (5) which were 3.4% also the result recorded by (18) which was (3.9%), and higher than the results of (15) 1.08%. While 44 (12.941%) uterine lesions were detected in 34 genitalia, the rate of 8.08% was reported by (15), but a high percentage of uterine lesions 27% was identified by (18). Statistical difference in prevalence of observed lesions in different localities might be due to various factors such as breed, age and species (5). While the highest numbers of pathological genital lesions were reported in Kurdistan region of Iraq, it might be due to many variable factors such as; bad management, malnutrition, education of the farmer and high contamination (4,12). The total incidence of Salpingitis was 6 (1.764%) cases, this finding was lower than those of other workers (4,12) that reported the incidence of 4%. While 0.5% and 0.57% are observed by (5,9), respectively. Four cases were bilateral, and the rest were unilateral (Table 1). The salpingitis was associated with ovaro-bursal adhesion and most frequently related to pathological conditions in the ovary. In this study, most cases of salpingitis linked to ovarian cysts. Grossly, salpingitis characterized by congestion and oedematous of the tubes and the walls were thickened

(Figure 1). This feature agreed with (19). Histologically, it was characterized by infiltration of chronic inflammatory cells within the subepithelial fibromuscular stroma of the uterine tubes. Edema was due to the presence of the inflammatory exudate (Figure 2). These findings agree with (20). One case (0.294%) of hydrosalpinx was reported bilaterally. The result of the present study is lower than the result of (13) which registered 3.8% while 0.2% reported by (20). The loss of the uterine tubes lumen patency is associated with both acquired and congenital salpingitis with extensive interstitial fibrosis, external pressure and obstruction (21, 22). The lesions include dilatation of the affected uterine tubes; the wall of the uterine tubes is translucent and contains watery fluid, similar result recorded by (23). Microscopically, the feature was mild to moderate infiltration of chronic inflammatory cells mostly lymphocytes with the subepithelial fibromuscular stroma. Furthermore, the pinkish inflammatory exudate is present in the given section and focal sloughing of the lining epithelium. These findings agree with the result of (24, 25). The prevalence of pyosalpinx was (0.294%) in the present study. (20) Reported 0.55%. Gross lesions included oedema of the uterine tubes which contain suppurative exudates (Figure 3) and were similar to results reported by (26). Microscopically, pyosalpinx characterized by infiltration of inflammatory exudate in the uterine tubes lumen and within the subepithelial fibromuscular stroma focal

sloughing of the lining epithelium occurred within the lumen (Figure 4). These findings agreed with the results of (20) and (22). Cases of pyosalpinx have been recorded to occur secondary to pyometra (20).

The incidence of the cysts on the uterine tubes (Para-tubal cysts) was (0.882%). The percentage of 2.15% recorded by (14, 27) detected the incidence of 0.41% in the sheep. Three cases were observed, two of them were unilateral, and one was bilateral. Grossly, the cyst has a thin, translucent wall attached to the wall of the uterine tubes and the sizes of the cyst vary from 0.5-1 cm in diameter (Figure 5). This condition was also detected by (22). Microscopically, the wall of the cyst composed of fibromuscular tissue that lined by pseudostratified epithelial cells (Figure 6). These findings agreed with (8). These cysts did not occlude the lumen of the uterine tubes, but make a pressure on it lead to narrowing of the uterine tubes occurred (28).

The total incidence of endometritis and metritis were 6.176%. The outcome of this study was similar to the results recorded by (4 and 12) which were reported 6% in the goats. The results observed by (9, 15 and 29) were 0.31% 1.34%, and 1.03%, respectively, which are lower than the results of the present study. Most of the cases were chronic inflammation of the uterus, endometritis and metritis grossly characterized by edema of the uterus hyperemia of the endometrium, and in most instances the lumen of the uterus contains viscous inflammatory exudate

(Figure 7). Microscopically, the endometritis characterized by marked increased in the endometrial thickness due to infiltration of chronic inflammatory cells, the proliferation of fibroblasts with the deposition of an extracellular matrix within the endometrium Figure (8 and 9). While in metritis, the gross and histopathologic lesions were similar the observation of (13). Metritis and endometritis happen due to the number of specific and non-specific infections that include leptospirosis, vibriosis, brucellosis and salmonellosis among others (10). These causes were short-lived and remained for more than two cycles of the oestrus (21). The predisposing factors of these infections were abortion, retention of placenta, dystocia, coitus, unhygienic herd management, and prolonged luteal phase. *Staphylococcus aureus* and *Escherichia coli* were also isolated from uterine infections of goats as major causes of uterine infection (30).

Pyometra had a prevalence of 1.470% from the total genitalia collected. This finding is higher than the results observed by (5, 13, and 29) which were registered 0.3%, 0.3%, and 0.4%, respectively. While the incidence of 2% was recorded by (4 and 12). Grossly, pyometra was characterized by distention of the uterus and filled with accumulated purulent exudate, the color of the pus was creamy to yellow with persistent of corpus luteum (Figure 10), similar lesions have been reported by (13 and 31). Histopathologically, (Figure 11), there was a

definite increase in uterine wall thickness, especially in the endometrium due to infiltration of light pinkish fibrinous inflammatory exudate with mild inflammatory cells proliferation. Congestion, and dilatation of endometrial blood vessels were seen, and distinct dilation of uterine glands also occurred. These results also mentioned by other workers (21, 31). Three cases of hydrometra were found; the percentage was 0.882% in the female goats. This result was similar to that of (5) who reported 0.8%, while lower than the result recorded by (34, 32 and 33) with an incidence between 9%, 3%, and 10%, respectively. Obstruction of the cervix that was found in some cases of hydrometra, is considered as an important cause of hydrometra, in the human and animals (28 and 35). The role of prolactin in the development of hydrometra in goats has been observed in some studies (37 and 38) but did not valid in other studies (36) which failed to observe any difference in the plasma prolactin of healthy and pseudopregnant goats. It has been suggested that fetal death with subsequent fetal resorption and a persistent corpus luteum can probably one of the causes of hydrometra (32). Hydrometra was characterized by the accumulation of clear, clean fluid in the uterus due to the closure of the cervix and the presence of a functional corpus luteum. The amount of the fluid varies from 1-2 liters or more (Figure 12). This outcome is similar to the results of (45). Microscopically, lesions of the uterus show diffuse subepithelial

Infiltration of inflammatory exudate mixed with chronic inflammatory cells mostly lymphocyte, the presence of edematous fluid in the endometrial stroma (Figure13). Similar changes reported by (32). Cystic endometrial hyperplasia was observed in 5 cases (1.470%) from the total numbers of genitalia examined. The incidence of 0.21% registered by (41). The condition was an accelerated lesion with endometrial dilatation resulted from increase in numbers and size endometrial glands. The endometrial glands secrete mucus leading to mucometra, hydrometra and sometime pyometra (42). Grossly, the lesion about 4 mm in diameters and translucent wall, irregularly presents in the endometrium (Figure14) corresponding changes reported by (43) cited by (41). Microscopically, the endometrial glands were significantly enlarged and contained pinkish fluid in the cysts (Figure 15). Similar observation have been made by (42). Two cases (0.588%) of *Cysticercus tenuicollis* were observed and the cyst attached to the serosa of the uterus. This finding is similar to that reported by (5), who reported an incidence of 0.6%. Cysts on the uterine wall with the prevalence of (0.294%) and the percentage of 0.2% was reported by (5). This condition was developed during involution of the uterus at postpartum. Enfolding of the serosa occurred after contraction of the myometrium a portion of the peritoneum, the serosal fold is embedded in the underlining connective tissue and form a cyst (28).The cyst was thin walled and contains clear fluid

1cm in diameter (Figure 16). Microscopically, the wall of the cyst composed the fibrous connective tissues and lined by cuboidal epithelial cell layer (Figure 17). This finding in gross and histopathologic changes agreed with that observed by (39) in dogs, and (40) in cats. One case (0.294%) of the uterine melanoma was observed in the current study without determining whether primary or metastatic. This observation has not been reported previously by Iraqi researchers. While metastatic uterine melanoma was recorded previously in human originated from primary melanomas of a number organs like skin, and hard palate (46). Grossly, the endometrium was thickened and had a dark color and present of clotted blood in the uterine cavity (Figure 18). These findings also observed by (47). Microscopically, it characterized by deposition of dark black melanin pigment within the phagocytic cells (melanophorus), which was being diffusely scattered within the fibromuscular stroma of the uterus (Figure 19). These findings of grossly and histologically changes were agree with the result of (47). Melanomas were more common among goats than in the sheep, and the female goats were more susceptible than the male ones (48) Previously, reported that perianal region was the preferred site of the melanoma in the goats because the perianal region is relatively unprotected by the hair so the melanin in the area is more susceptible to the carcinogenic effect of the sunlight of ultraviolet radiation (49).

One case (0.294%) of leiomyosarcoma was detected in the present study that associated with ovarian tuberculosis in a complicated case. The uterus significantly enlarged, and lobulated (Figure 20), this result mentioned by (50). A histopathologic feature of the tumour demonstrates the presence of polymorphic cells variable in shape and size with different sizes of nuclear randomly oriented in the different direction. Some of these cells are hyperchromatic with the abnormal mitotic figure. These pleomorphic cells are associated with chronic inflammatory cells, mainly lymphocytes (Figure 21). This finding agreed with the observation that recorded by (50).

The total incidence of cervicitis were 1.470% from entire genital tracts examined by naked eyes. (18 and 13) were described 3.9% and 1.4% subsequently. All cases were associated with coincidental endometritis. Although cervicitis, was observed in 5 cases while uterine inflammation with noticeable changes was evident in 21 genital tracts. This result supports the fact that the cervix is comparatively resistant to infection, due to its endowed with the mucous-secreting epithelium and an infection resistant fibromuscular layer beside some normal flora (28). Isolation of the pathogens from cervicitis cases was not attempted. Nonspecific bacterial infections gathering from ascending infections in association with fetal maceration or post-parturient metritis could have played a significant role in the etiology of cervicitis (13). Grossly, the wall

of the cervix thickened and contains brownish color exudates (Figure 22). Histologically, cervicitis characterized by infiltration of mononuclear inflammatory cells and significant proliferation of fibromuscular stroma (Figure 23). The gross and microscopic lesions agreed with the results of (14). In conclusion, On the basis of the collected samples from goats genitalia from the slaughter house in Sulaimani province, it was concluded that the uterine melanoma, and uterine leiomyosarcoma were firstly recorded in goat that has not been reported by Iraqi researchers previously.

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