

HISTOPATHOLOGICAL STUDY OF OVARIAN AND UTERINE TUMORS IN THE REPRODUCTIVE SYSTEM OF OVINE IN SOUTH OF IRAQ

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ABSTRACT

The ewes are one of the most important ruminants in Iraq due to their great economic value. This study highlighted visible microscopic lesions on the female reproductive system of ewes reflect the likelihood of developing tumors that cause significant economic losses. Samples were collected from Basrah abattoir in southern Iraq, from the beginning of September 2019 to the end of December 2019. Samples of 60 suspected abnormal masses were obtained, that showed various microscopic lesions in the female reproductive system of ewes. The microscopic tumors were divided into two positive groups of 36 cases out of 60 suspected abnormal masses: Ovarian tumors 12 cases (20%), and uterine tumors 24 cases (40%). The current study confirms that the tumors of the female reproductive system of the benign type in the uterus only, while in the ovary tumors are benign and malignant types. The tumors of the female reproductive system of ewes are among the most complex health problems facing these animals.

INTRODUCTION

The reproductive system of the small ruminants tumors of this system come secondly after to skin tumors (1). Tumors in female reproductive tract may occur in ewes such as ovarian granulosa cell tumor and leiomyoma (2). There are no extensive studies on the causes of the appearance of tumors in small animals, but the experimental research on the laboratory animals has shown that the main causes of tumors are different, and these causes may be combined such as overdoses of hormones (3), aging and the presence of large quantities of chemicals in food or in the environment surrounding the animal, especially heavy elements such as cobalt and lead (4,

5). Many infectious diseases cause tumors as papilloma virus and bovine leukemia virus (BLV) (6,7). Also the exposure of laboratory animals to radiation has led to various tumors in the body (8).

This study aimed to investigate the types of the tumors in the ewe's reproductive system and classifying them with stabilizing their percentages (tumor distribution), also, histopathological assessment to determine the pathognomonic lesions of female reproductive system tumors in ewes.

MATERIALS AND METHODS

The methods of the study included the following practical steps by a comprehensive investigation of tumors in the reproductive system in the ewes in Basrah abattoir according to the genital organs with studying their histopathological changes. A total of 60 suspected cases of female genital tracts tumors (ovary and uterus) were obtained from Basrah slaughterhouse, from beginning of September 2019 to the end to December of 2019. The specimens with age (2 – 3 years) were collected four times per week. Specimen of ewes genital tracts were preserved in cool box that contains normal saline, pieces of ice and were transported to pathology department at college of veterinary medicine University of Basrah. The samples of the lesions were fixed in 10% neutral buffered formaldehyde for 3 days and prepared for histopathological techniques (9).

RESULTS

The distribution of the reproductive system tumors of ewes obtained from a total 60 suspected cases showed a different microscopical lesions in which 60 (100%) cases revealed a different microscopical lesions represented a diagnosed tumors at microscopical levels, these divided into the following:

Ovarian tumors represented in 12 (20%) cases in which the cellular fibroma diagnosed in 6 (10%) cases, cystadenoma in 3 (5%) cases and secondary hepatocellular carcinoma in 3 (5%) cases as shown in table (1).

Table (1): Distribution of ovarian tumors.

	Types of ovarian tumors	Percentages (%)
1	Cellular fibroma	6 (10%)
2	Cystadenoma	3 (5%)
3	Secondary hepatocellular carcinoma	3 (5%)
4	Total ovarian tumors / total reproductive system tumors	12 (20%)

The distribution of uterine tumors represented in 24 (40%) cases in which the adenomyoma diagnosed in 3 (5%) cases, leiomyoma in 9 (15%) cases, papillary adenoma in 3 (5%) cases, endometrial adenoma in 3 (5%) cases, fibromyoma in 4 (6.66%) cases and fibroadenoma in 2 (3.33%) cases as shown in table (2).

Table (2): Distribution of uterine tumors.

	Types of uterine tumors	Percentages (%)
1	Adenomyoma	3 (5%)
2	Leiomyoma	9 (15%)
3	Papillary adenoma	3 (5%)
4	Endometrial adenoma	3 (5%)
5	Fibromyoma	4 (6.66%)
6	Fibroadenoma	2 (3.33%)
4	Total uterine tumors / total reproductive system tumors	24 (40%)

The microscopical results of the ovary showed a present ovarian cellular fibroma characterized by a thin spindle cells in a whorled to wavy appearance, as well to angiogenesis surrounded the atypical hyperplastic lesions (figure 1). Moreover, it showed an ovarian cystadenoma characterized by the wall of the cystic area showing no epithelium lining with multiple sizes and shapes of the cysts surrounded by fibroma in the interstium , also it was notived a mild atypia referred to mitosis, as well to angiogenesis surrounded the atypical hyperplastic cystic lesions (figure 2).

In other histopathological section of the ovary showed secondary metastatic hepatocellular carcinoma implanted in the ovary characterized by well differentiated polygonal to cuboidal and flattened cells with eosinophilic cytoplasm contained a dense eosinophilic secretions and round centric nuclei figure 3 and 4.

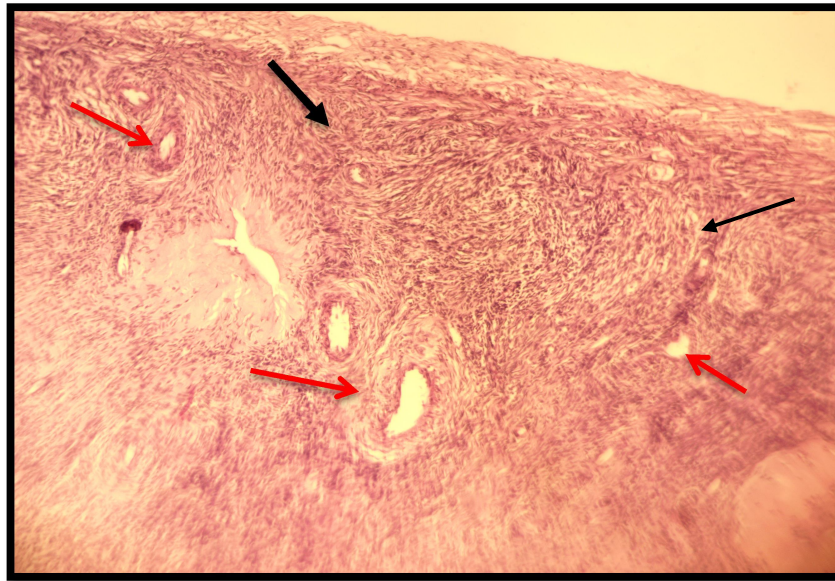


Figure (1): Histopathological section of the ovary showed ovarian cellular fibroma characterized by a thin spindle cells in a whorled to wavy appearance (black arrows), as well to angiogenesis surrounded the atypical hyperplastic lesions (red arrows). H&E stain. 10X.

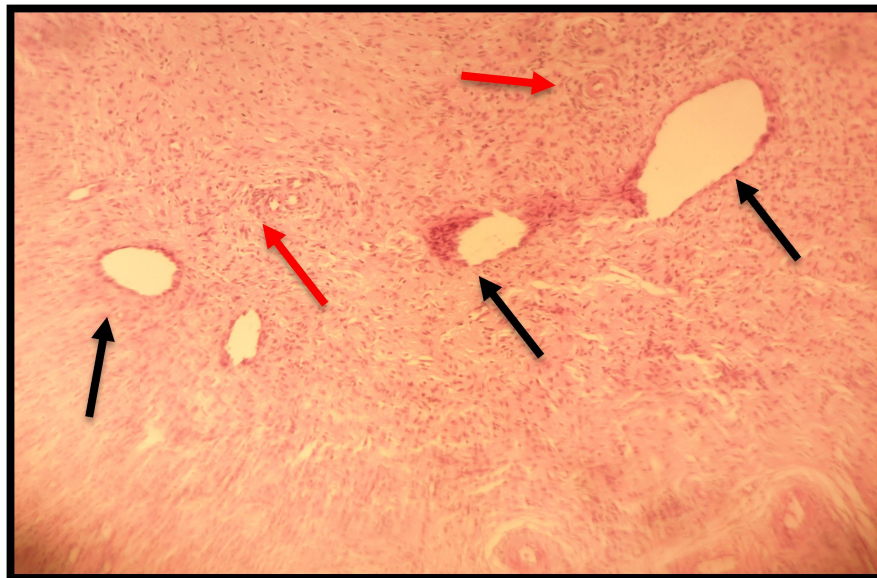


Figure (2): Histopathological section of the ovary showed an ovarian cystadenoma characterized by the wall of the cystic area showing multiple sizes and shapes of the cysts surrounded by fibroma in the interstium , also noticed a mild atypia referred to mitosis (black arrows), as well to angiogenesis surrounded the atypical hyperplastic cystic lesions (red arrows). H&E stain. 10X.

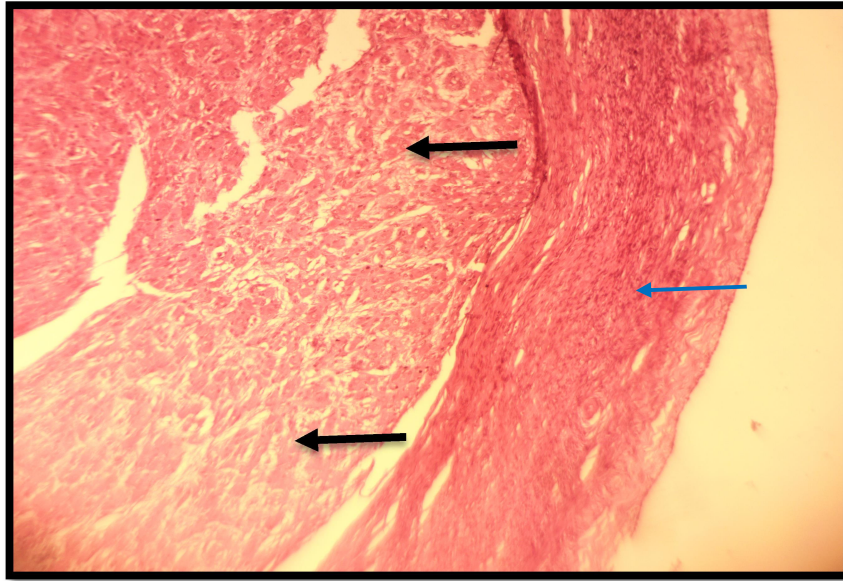


Figure (4): Histopathological section of the ovary showed secondary metastatic hepatocellular carcinoma implanted in the ovary surrounded by thick fibrous capsule (blue arrow) and characterized by well differentiated polygonal cells with eosinophilic cytoplasm (black arrows). H&E stain. 10X.

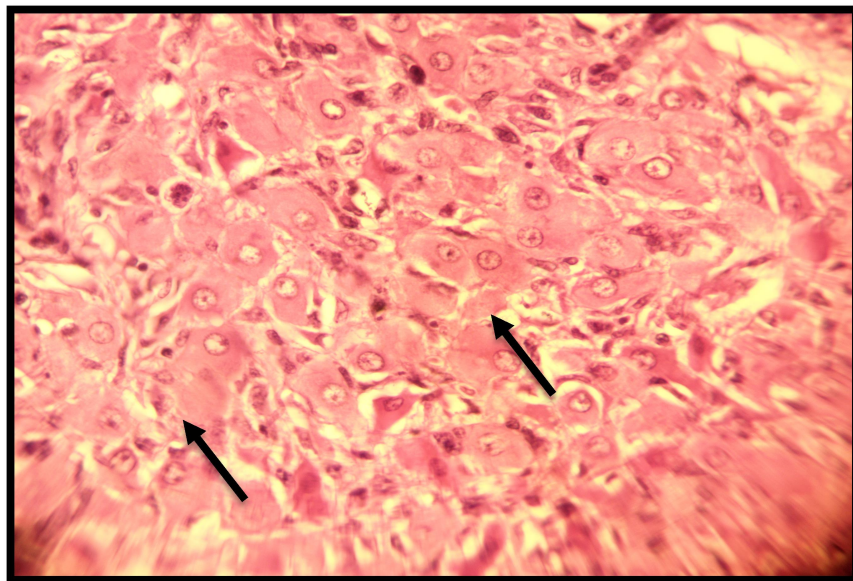


Figure (3): Histopathological section of the ovary showed secondary metastatic hepatocellular carcinoma implanted in the ovary characterized by well differentiated polygonal to cuboidal and flattened cells with eosinophilic cytoplasm contained a dense eosinophilic secretions and round centric nuclei (black arrows). H&E stain. 40X.

The microscopical results of the uterus showed a present of adenomyoma which characterized by a non-neoplastic lesion of myometrial tissue referred to Presence within the myometrium of endometrial glands and stroma with a circumscribed nodular aggregate of neutral endometrial glands surrounded by endometrial stroma (figure 5). Moreover, it showed a leiomyoma which characterized by a well circumscribed lesion composed of benign spindle shaped smooth muscle cells appeared as a smooth muscle bundle whorled form differentiated by well vascularized connective tissue, with eosinophilic cytoplasm often elongated the smooth muscle cells (figure 6).

In addition, the current study showed endometrial papillary to cauliflower like adenoma characterized by a predominantly confluent glandular to papilliform and or cauliflower growth refereeing to atypical hyperplastic endometrial glandular proliferation figure 7 and 8. Besides, another histopathological section showed a fibromyoma which composed eosinophilic cytoplasm, mixing with a varying volume of extracellular collagen, thin spindle cells in a whorled structure distinguished by bland to wavy and fusiform nuclei around it (figure 9). Also it showed an uterine fibro-adenoma characterized by well circumscribed, unencapsulated biphasic tumor referred to a pleomorphic and hyperchromatic atypical proliferation of both glandular and stromal elements (figure 10).

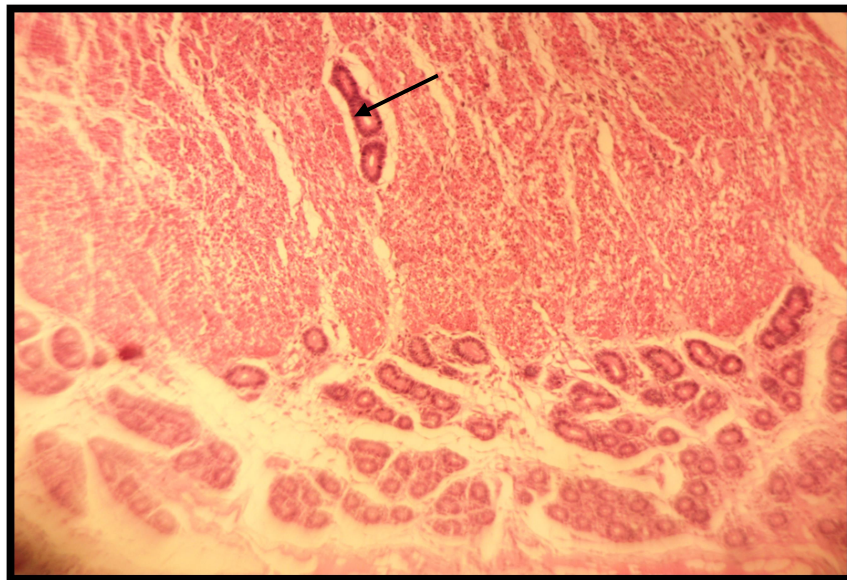


Figure (5): Histopathological section of the uterus showed adenomyoma characterized by a non-neoplastic lesion of myometrial tissue referred to presence of endometrial glands and stroma within myometrium, with a circumscribed nodular aggregate of benign endometrial glands surrounded by endometrial stroma (black arrow). H&E stain. 10X.

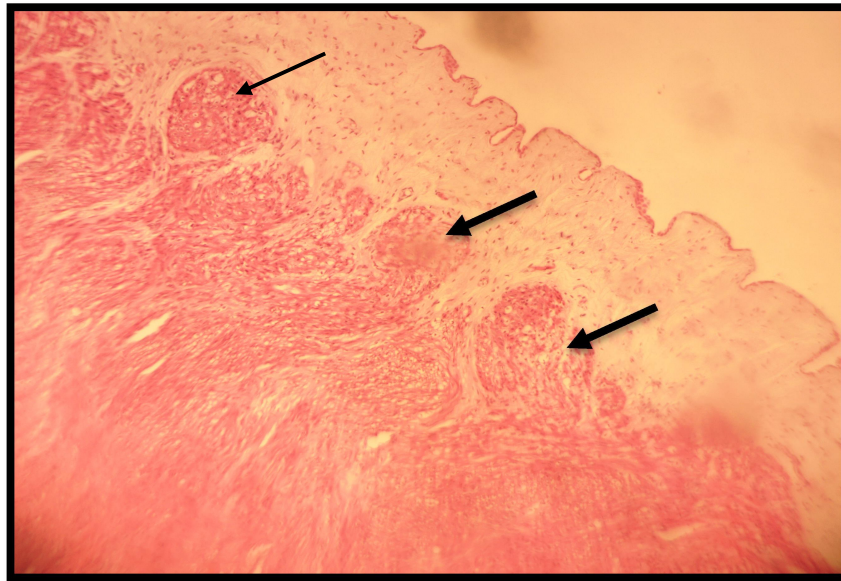


Figure (6): Histopathological section of the uterus showed leiomyoma which characterized by a well circumscribed lesion composed of benign spindle shaped smooth muscle cells appeared as a whorled pattern of smooth muscle bundles separated by well vascularized connective tissue, also the smooth muscle cells are elongated with eosinophilic cytoplasm (black arrows). H&E stain. 10X.

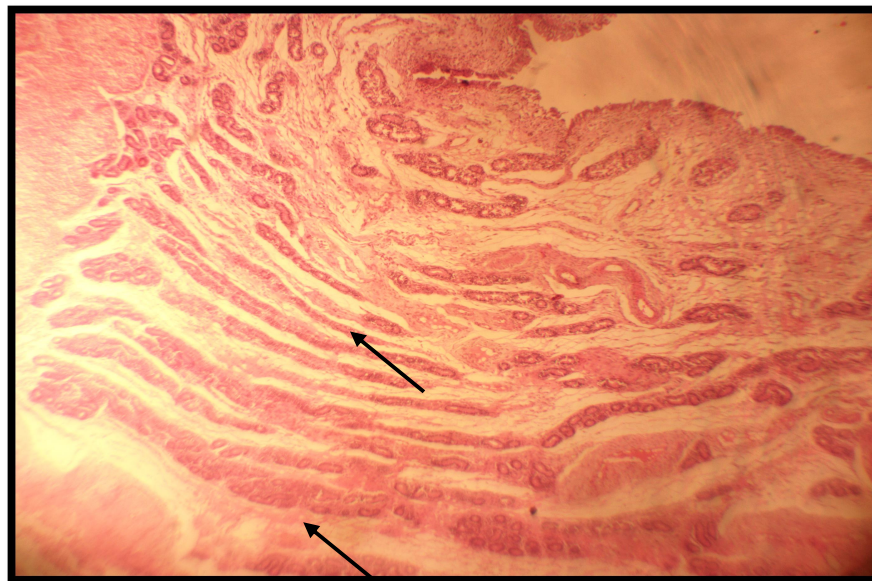


Figure (7): Histopathological section of the uterus showed endometrial glandular papillary adenoma characterized by a predominantly confluent glandular to hyperplasia refereeing to atypical hyperplastic endometrial glandular proliferation (black arrows). H&E stain. 10X.

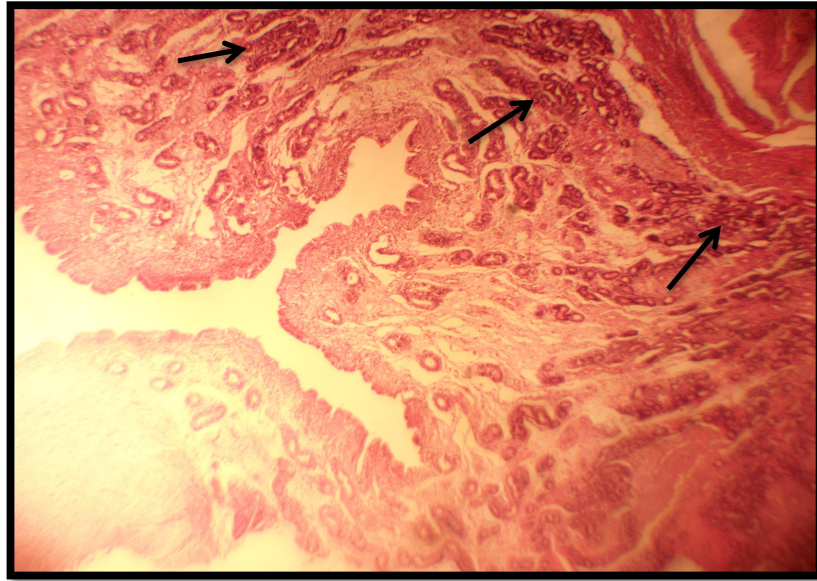


Figure (8): Histopathological section of the uterus showed endometrial adenoma characterized by a predominantly confluent glandular to a cord-like growth refereeing to atypical hyperplastic endometrial glandular proliferation (black arrows). H&E stain. 10X.

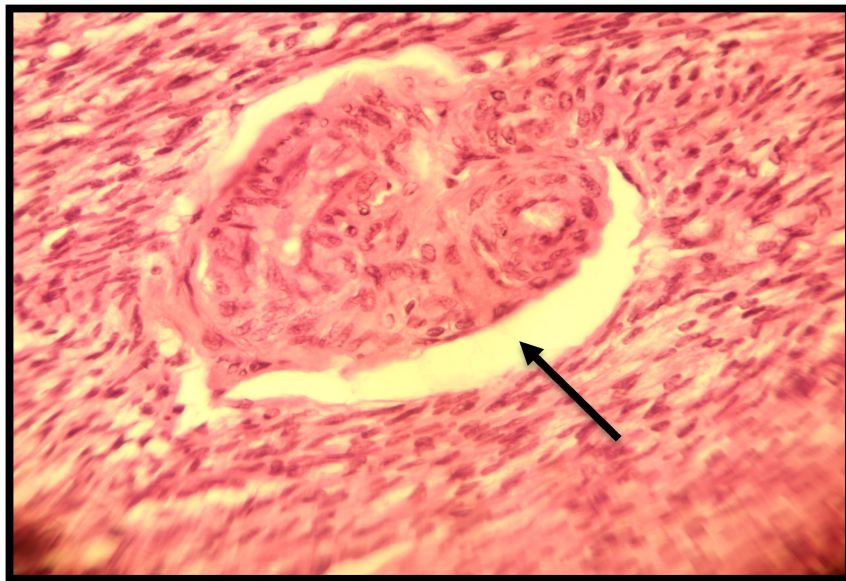


Figure (9): Histopathological section of the uterus showed a fibromyoma which composed a thin spindle cells in a whorled arrangement characterized by a bland to wavy and fusiform nuclei as well the cytoplasm was eosinophilic, blending with a variable amount of extracellular collagen around it (black arrow). H&E stain 40X.

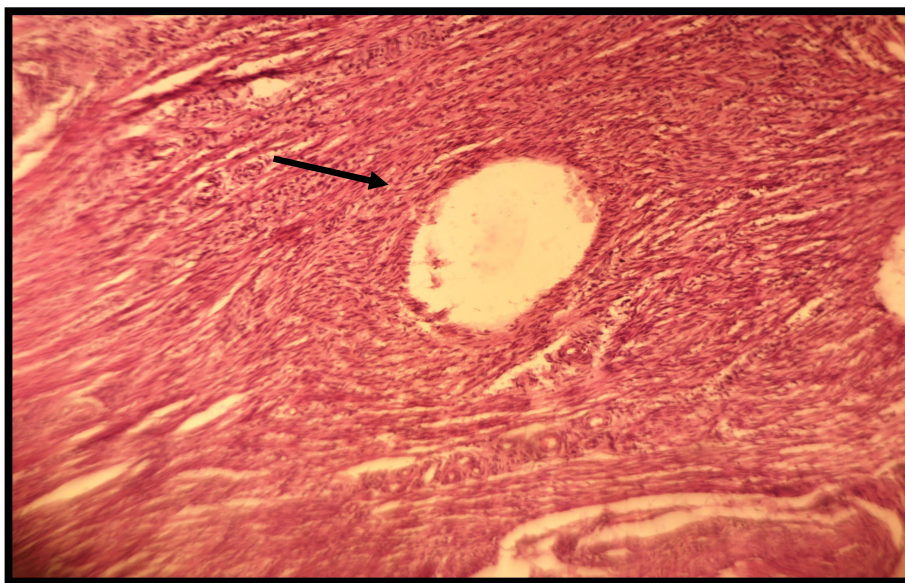


Figure (10): Histopathological section of the uterus showed uterine fibroadenoma characterized by well circumscribed, unencapsulated biphasic tumor referred to a pleomorphic and hyperchromatic atypical proliferation of both glandular and stromal elements (black arrows). H&E stain. 10X.

DISCUSSION

The distribution of the reproductive system tumors of ewes obtained from a total 60 suspected cases showed a different microscopical lesions in which 60 (100%) cases revealed a different microscopical lesions represented a diagnosed tumors at microscopical levels, these results referred to the accurate proportion of the incidence of the female reproductive system tumors in sheep because the high numbers of diagnosed tumors in these types of animals comparing to other literatures concerning the tumor incidence in farm animals, these facts in consistence with 2, Who indicated that reproductive organ tumors in sheep and goats are not rare and should be taken into account in differential diagnosis in cases of low reproductive function that showed complete reproductive function (24) cases of female reproductive system divided into (4) cases in ovary, (10) cases in uterus,

Besides, the uterine adenomyoma appeared in 3 (5%) cases and the uterine fibromyoma in 4 (6.66%) cases these results obviously appeared lower than the investigations of (10,11,12) who they

reported that the uterine adenomyoma contributed in 10 cases and the uterine fibromyoma contributed in 60% cases.

In addition, the uterine leiomyoma occurred in 9 (15%) cases, the uterine papillary adenoma appeared in 3 (5%) cases, the uterine endometrial adenoma in 3 (5%) cases and the uterine fibroadenoma in 2 (3.33%) cases these results obviously appeared higher than the investigation of (13-16) who they reported that the uterine leiomyoma contributed in only (2) cases, uterine papillary adenoma appeared in (1) cases, the uterine endometrial adenoma in (2) cases, the uterine fibroadenoma in 1 case, these results may occur as a result of the fewest numbers of inspected animals in these study.

Microscopical study: The microscopical study of ovary showed ovarian cellular fibroma characterized by thin spindle cells in a whorled to wavy appearance, these results may occur due to proliferation of connective tissue of ovarian cortex, this idea agreed (17), who mentioned that fibroma are rare benign tumors, which grow from the connective tissue of ovarian cortex, origin and develop from gonadal stromal cell. The ovarian cystadenoma characterized by the wall of the cystic area showing no epithelium lining with multiple sizes and shapes of the cysts surrounded by fibroma in the interstium, these results may occur due to degenerative change, that studied and were consistent with results of (18), who they reported that In fibroids, cystic change may arise as a degenerative change, in which case no lining epithelium in the cystic portion is seen.

The microscopical study of ovary also showed secondary metastatic hepatocellular carcinoma implanted in the ovary characterized by well-differentiated polygonal to cuboidal and flattened cells with eosinophilic cytoplasm contained a dense eosinophilic secretions and round centric nuclei. these results may occur due to elevated Alpha-Fetoprotein (AFP) serum and the presence of hepatoid carcinoma outside the ovary and tumor growth at the surface of the ovary raise the risk of ovarian hepatoid carcinoma, these findings consistence with (19- 24) who they mentioned that the diagnosis of metastatic hepatocellular carcinoma was based on the simultaneous presence of ovarian and hepatic lesions, elevated serum (AFP), and recently, hepatoid ovarian carcinomas have been identified as a distinctive form of carcinoma that appears outside the liver, but to a significant extent due to its staining for hepatocellular carcinoma (HCC) both histologically and immunohistochemically (AFP). Ovarian hepatoid carcinomas typically occur in older patients, and the appearance of focal staining for (AFP) is as rare as the ovary for a similar condition at a site. There may also be hepatoid ovarian carcinomas in the liver, pancreas, lungs, kidneys, and urinary

bladder. Since hepatoid ovarian carcinomas are typically metastatic from the stomach and leave a lesion on the surface of the ovary, the presence of hepatoid carcinoma outside the ovary and the growth of the tumor on the surface of the ovary may increase the risk of hepatoid ovarian carcinoma.

The microscopical study of the uterus showed a present of adenomyoma which characterized by a non-neoplastic lesion of myometrial tissue referred to presence within the myometrium of endometrial glands and stroma with a circumscribed nodular aggregate of neutral endometrial glands surrounded by endometrial stroma, these results may occur due to composed of irregularly shaped hyperplastic glands composed of benign endometrial glands without architectural abnormality, organized in the smooth muscle hazardlessly, these finding in agreement with (10), who mention that uterine adenomyomas are technically benign. They typically appear in the endometrium, in the lower uterine section, and sometimes in the endocervix, and have both common and atypical forms. They are crudely similar to endometrial polyps. The tumor consists of benign endometrial glands organized haphazardly inside the smooth muscle without architectural abnormality, while the atypical adenomyoma consists of irregularly developed hyperplastic glands.

The uterus also showed a leiomyoma which characterized by a well circumscribed lesion composed of benign spindle shaped smooth muscle cells appeared as even the smooth muscle cells are elongated with eosinophilic cytoplasm, a whorled pattern of smooth muscle bundles divided by well vascularized connective tissue, these results may occur due to the overgrowth of smooth muscle and connective tissue in the uterus, the proliferation of a monoclonal in smooth muscle cells, these findings consistency with 25, who mentioned that uterine leiomyomas (or uterine fibroids) are benign tumors that develop from the overgrowth of smooth muscle and connective tissue in the uterus, where monoclonal smooth muscle cell proliferation occurs.

The uterus showed a fibromyoma which composed eosinophilic cytoplasm , mixing with a varying volume of extracellular collagen, thin spindle cells in a whorled structure distinguished by bland to wavy and fusiform nuclei. around it, these results may occur due to altered smooth muscle cell proliferation and disordered angiogenesis playing prominent roles and the pathophysiology of myomas is still largely obscure, these findings consistence with (11,12) who mentioned that the pathophysiology of myomas is still highly obscure and the origin of uterine fibroids is uncertain and their pathology is little known, with altered smooth muscle cell proliferation and disordered angiogenesis playing prominent roles.

The microscopic examination of the uterus revealed that these findings may occur due to endometriosis of uterine fibroadenoma with 26, who mentioned that adenofibromas have been associated with endometriosis, and some rese archers suggest that endometriosis with severe smooth muscle metaplasia, that is, endometriosis.

The uterus showed as an endometrial papillary to adenoma which characterized by predominant confluent glandular to hyperplasia of the gland in the uterus that appears as a cord-like shape in the endometrium. these results may occur due to ulcerated cuboidal surface epithelium and mild mixed invasion of inflammatory cells, necrosis focal points and serosal ulceration, and solitary changes, these findings consistence with (27), who mentioned that masses of various sizes were seen in uterus. The gross appearance was complex, varying from single solid, smooth masses of expansive or polypoid growth and intact serosal surface to multinodular or cauliflower-like masses of non-homogeneous, multicolored cut surfaces, necrosis focus and serosal ulceration, solitary changes were observed, the cuboidal surface epithelium was ulcerated and, on microscopic examination, a slight mixed inflammatory cell infiltration was seen. Centered on the dominant tissue, polyps is subdivided into stromal or glandular polyps. The stromal polyps were loosely packed stromal cells with varying quantities of eosinophilic cytoplasm displaying spindle-shaped or stellate morphology.

The uterus also showed endometrial adenoma characterized by a predominantly confluent glandular to cauliflower like growth refereeing to atypical hyperplastic endometrial glandular proliferation. These results may occur due to at the vestibular orifice of the gland, the mucin-secreting columnar epithelial cells or the squamous epithelium and rare in animals, these findings consistence with (28,16) who mentioned that Bartholin gland tumors are unusual in animals . Bartholin gland tumors are commonly known as adenomas and carcinomas, with most tumors originating in the vestibular orifice of the gland, either from mucin-secreting columnar epithelial cells or from the squamous epithelium.

دراسة نسيجية مرضية لأورام المبيض والرحم في الجهاز التناسلي للأغنام في جنوب العراق

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الخلاصة

تعتبر النعاج من اهم المجترات في العراق لقيمتها الاقتصادية الكبيرة. سلطت هذه الدراسة الضوء على الآفات المجهرية المرئية في الجهاز التناسلي الأنثوي للنعاج مما يعكس احتمالية الإصابة بالأورام التي تسبب خسائر اقتصادية كبيرة. جمعت العينات من مسلخ البصرة في جنوب العراق ، من بداية شهر أيلول ٢٠١٩ وحتى نهاية كانون الأول ٢٠١٩ ، وتم الحصول على ٦٠ كتلة غير طبيعية مشتبه بها ، أظهرت آفات ميكروسكوبية مختلفة في الجهاز التناسلي الأنثوي للنعاج. تم تقسيم الأورام المجهرية إلى: أورام المبيض ١٢ (٢٠٪) من إجمالي ٦٠ (١٠٠٪) حالة ، أورام الرحم ٢٤ (٤٠٪) حالة. تؤكد الدراسة الحالية أن أورام الجهاز التناسلي الأنثوي من النوع الحميد في الرحم فقط ، بينما في المبيض أورام من نوع حميدة وخبيثة. تعد أورام الجهاز التناسلي للأنثى من أكثر المشاكل الصحية تعقيداً التي تواجه هذه الحيوانات

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