

RETROSPECTIVE STUDY OF UTERINE TUBES PATHOLOGICAL ABNORMALITIES IN SLAUGHTERED NON-PREGNANT COWS IN SULAIMANI PROVINCE.

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ABSTRACT

Received at: 26/8/2015

Accepted: 25/10/2015

The current study was conducted to address the pathological conditions of uterine tubes of cows slaughtered at the abattoir in Sulaimani, Kurdistan Region-Iraq. The pathologic conditions were objected to macroscopic and microscopic examination of 404 samples of female genitalia collected from slaughtered non-pregnant cows. Collection of female genitalia samples was conducted from February to September 2014 by visiting the Qaragol slaughterhouse twice a week. The organs were observed macroscopically for pathological abnormalities and stained tissues with Haematoxyline and eosin. They were examined under microscope for determination of the type of lesion present in the organ. Among the 404 genitalia samples collected from the non-pregnant animals, 206 (51%) were found without gross pathological abnormalities (with cyclic activity) and the 71(17.57) samples were found with gross pathological abnormalities of uterine tubes. Detected lesions in the uterine tubes included salpingitis 9.15%, pyosalpinx 4.21%, hemosalpinx 1.48%, uterine tube adhesion 0.74%, mesosalpinx cyst 0.74%, nodules on mesosalpinx 0.74%, occluded uterine tube 0.25%, and presence of cysts on the uterine tube wall 0.25%. Histopathologically, salpingitis was characterized by erosion of the mucosal layer lining, while pyosalpinx showed a heavy inflammatory cell reaction composed of a mixture of neutrophils and lymphocysts. Hemosalpinx showed the stromal hemorrhage in the core of the villus like folds of epithelium. Cystic uterine tube, (paratubal paramesonephric cyst), revealed a single layer of tubal type ciliated columnar epithelium resting on fibrous tissue of the normal fallopian tube. It was concluded that uterine tube abnormalities constitutes an percentage of 17.57% and salpingitis is the most common pathology of uterine tubes in non-pregnant cows.

Key words: *Uterine tubes, abnormalities, non-pregnant cows, salpingitis, pyosalpinx.*

INTRODUCTION

Farm animals are one of the fundamental pillars of the economy of Kurdistan region in general, and cows in particular as an economical unit from which people of Kurdistan get great benefit. Thus reproductive problems among cows have a direct influence on the nutritional needs of the people as well as on the economic status of the region (Amin, 2001). Infertility among farm animals is one of the great economic problems (Zerihun, 2001).

Abnormalities of uterine tubes of cows limit the transfer of male and female gametes may result in sterility or infertility. The gross abnormalities and lesions of the uterine tube like salpingitis, pyosalpinx, hydrosalpinx, occlusion, aplasia and other micro-lesion which are not palpable per rectum and could be

responsible for reproduction failure in farm animals, and these tubular abnormalities may show repeat breeding of known or obscure etiology which requires to be confirmed by patency testing (Shivhare *et al.*, 2012). According to the definition proposed by Zemjanis (1980), a repeat breeder cows refers to any cows that have failed to conceive after three or more services showing normal estrous cycles and no clinical pathologies. In repeat breeder cows, the cause of infertility might be either fertilization failure or early embryonic death Lamming & Darwash, (1998); Bage, (2002) as well as Ferreira *et al.* (2008) working only with repeat breeder cows, observed that these animals show some degree of oviduct occlusion.

The percentage rate of uterine tube abnormalities in cows was recorded by Khasatiya *et al.* (1999) who recorded the fallopian tube patency testing as 16% in

cow. Fathalla *et al.* (2000) mentioned that the oviductal lesions had 3.5%. Kunbhar *et al.* (2003); Dorobantu, (2010); Shivhare *et al.* (2012) reported in their studies that the percentage of the disease was 60%, 9.27%, 25.2% respectively. In Iraq Amin, (2001); Ali, (2009) recorded the uterine tube abnormalities as 11.52%, 0.76%.

The present study was conducted to determine the microscopic and macroscopic lesions of abnormalities of uterine tubes in non-pregnant cows slaughtered at the abattoir of Sulaimani province, Kurdistan region-Iraq.

MATERIALS and METHOD

The study was conducted on 404 samples of non-pregnant cow's genitalia which were collected on two days of week from anew slaughterhouse in "Qaragol" district in Sulaimani province. The data collection was carried out from February to the end of September 2014. These samples were collected randomly from local breeds, the age of the animals was from 2- 5 years and no information regarding the identity and history of the animals were included in this study. The samples were transported in a cool box to laboratory of Veterinary Teaching Hospital at the College of Veterinary Medicine in the University of Sulaimani within three hours of the collection for

gross pathological examination. The pregnant genitalia were excluded and all non-pregnant genitalia were examined visually for gross morphological or pathological abnormalities.

The uterine tubal patency assessment was carried out according to the method of Dawson, (1958) by injecting colored fluid (Indian ink) at their junction with the uterine horns of both right and left sides of tubes, free flow of stain from the other side (fimbriated end) was considered indicative of non-obstructed tubes. The uterine tube was classified and ranked (Ferreira *et al.*, 2008) according to its patency (patent; partially patent; occluded). Uterine tubes were opened by midline incision and examined for inflammation, presence of pus and other changes were recorded and tissue samples were fixed in a plastic container which contains 10% buffered formalin for histopathological examination.

RESULTS

Non- pregnant genitalia from cows were examined; it was 206(51%) genitalia without gross pathological abnormalities (with cyclic activity) while 71(17.57) of them with gross pathological lesions of uterine tubes The different types of abnormalities of uterine tube in non-pregnant cows presented in Table (1).

Table 1: Gross-pathological abnormalities of uterine tube in cow's genitalia in the Sulaimani abattoir.

Pathological Abnormalities	R-side No.	L-side No.	Both side No.	Total No.	Percentage n= 71	Percentage % n= 404
Pyosalpinx	3	3	11	17	23.94	4.21
Salpingitis	5	5	27	37	52.11	9.15
Occluded uterine tube	1			1	1.40	0.25
Uterine tube adhesion	2	1		3	4.22	0.74
Hemosalpinx	2		4	6	8.45	1.48
Mesosalpinx cyst	2	1		3	4.22	0.74
Nodules on mesosalpinx	2	1		3	4.22	0.74
Cyst on uterine tube wall	1			1	1.40	0.25
Total	18	11	42	71	100	17.57



Fig. 1: Pyosalpinx of uterine tube, thickened wall accumulated pus in the luminal tube.

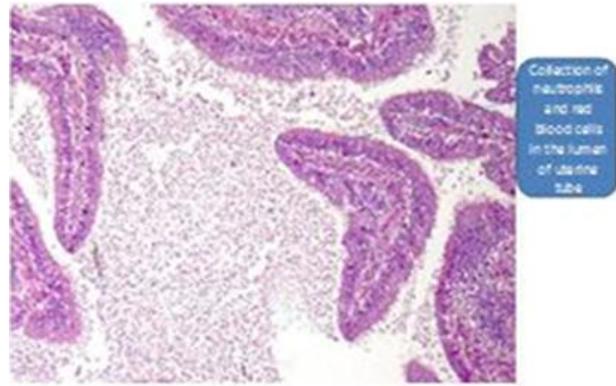


Fig. 2: Pyosalpinx shows a heavy Inflammatory cell reaction composed of a mixture of neutrophils and lymphocytes (H&E stain 400X).

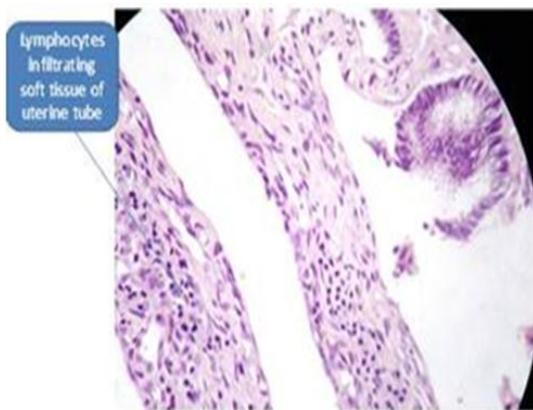


Fig. 3: Chronic salpingitis, it shows infiltration of mononuclear inflammatory cells mainly lymphocytes fibrous tissue which lack epithelial lining (H&E stain 100X).



Fig. 4: Occlusion of the uterine tube longitudinal section shows, obliteration of lumen by



Fig. 5: Uterine tube adhesion, adhesion between Mesosalpinx and perisalpinxial tissues.

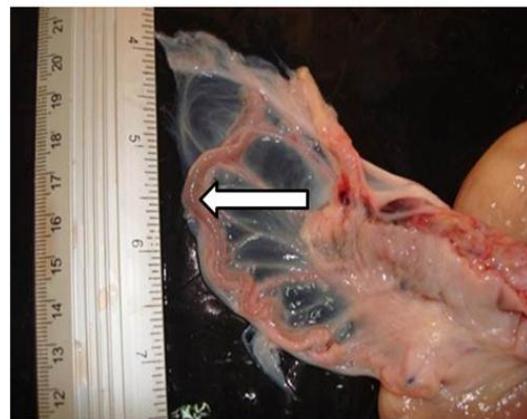


Fig. 6: Hemosalpinx; swelling of uterine tube filled with bloody discharge.

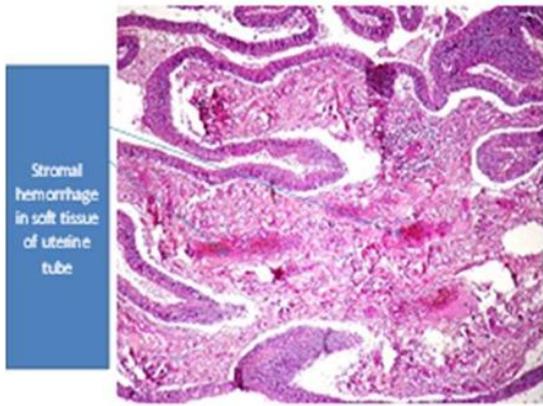


Fig. 7: Shows the uterine tube with stromal Hemorrhage in the core of the villus like folds of epithelium (H&E stain 100X).



Fig. 8: Mesosalpinx cyst, which is 0.5-0.7 cm in diameter.

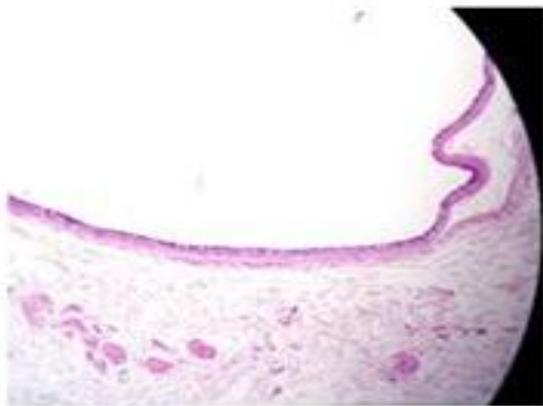


Fig. 9: Mesosalpinx cyst; describes the cyst, which is called paramesonephric cyst and is a remnant of paramesonephric (Mullerian) duct system (H&E stain 100X).

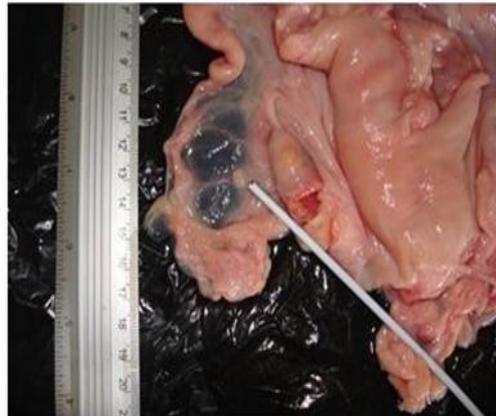


Fig. 10: Nodule on mesosalpinx in the left part of genital tract.



Fig. 11: Showing the cyst on uterine tube wall in the right side.

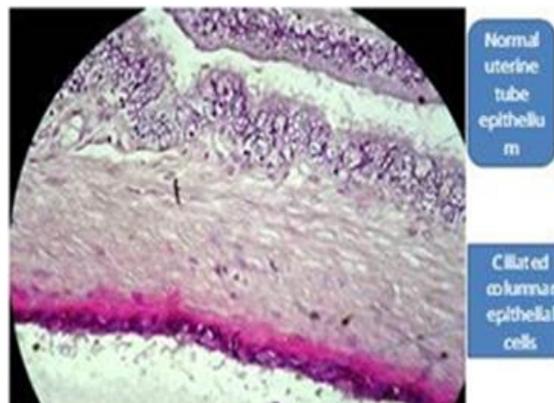


Fig. 12: Cystic on uterine tube, paratubal paramesonephric cyst, also called (Hydatid of Morgani), single layer of tubal type Ciliated columnar epithelium resting on fibrous Tissue of the normal fallopian tube (H&E stain 400X).

DISCUSSION

The present abattoir study has provided useful information on the types and prevalence of gross pathological abnormalities of uterine tubes of cows in Sulaimani region. About 71 genitalia (17.57%) showed one or more abnormalities as in Table (1).

The total percentage of uterine tubal abnormalities 17.57% as in Table (1) from the total reproductive tracts is higher than the results of other studies by Amin (2001); Ali (2009); and Dorobantu (2010) which were 11.52%, 0.76%, and 9.27% respectively, and lower than the observation mentioned by Shivhare *et al.* (2012) which was 25.2%.

The percentage of the pyosalpinx reaches 4.21% from the total reproductive tracts as in Fig. (1), and the result is lower than the rate of Kunbhar *et al.* (2003) which was 26.2% and higher than the rates of Shivhare *et al.* (2012) which were 0.8%. Pyosalpinx occurs following ascending uterine infections and this agree with the suggestion of Kennedy and Miller (1993). Microscopic appearance of pyosalpinx in present study is in agreement with McEntee (1990) that a heavy inflammatory cell reaction is composed of a mix of neutrophils and lymphocytes associated with a notable degree of tissue edema as in Fig. (2).

Salpingitis have an percentage of 9.15%, which were observed more bilaterally than unilaterally, grossly consisted of edematous appearance and thickening of oviduct. The percentage rate of salpingitis in cows, in present study was higher than 0.68%, 0.54%, 3%, 1.1% and 3.2% as reported by Herenda (1987), Chaudhari and Paul-Bokko (2000), Fathalla *et al.* (2000), Simmenew *et al.* (2011) and Shivhare *et al.* (2012) respectively, and lower than 23% as reported by Kunbhar *et al.*, (2003). In Iraq, the observation of salpingitis was lower than the recorded by Amin, (2001) which was 10.54% and higher than the rate diagnosed by Azawi *et al.* (2008) which was 1.2%. In this study, along with salpingitis adhesions, mesosalpingitis with adhesions were also found; the obtained result agreement with Ali (1989) that referred the salpingitis was associated with ovaroburalsl adhesion, and the obtained result was agree with Ali (1989) that the salpingitis is very frequently associated with pathological conditions in the ovary, the most common lesion is that of retained and cystic corpus luteum. Histopathologic examination, chronic salpingitis which is in agreement with Hatipoglu *et al.* (2002) showed erosion of lining mucosal layer caused by inflammation and explained the chronic salpingitis, and there is denudation of mucosa resulting from inflammatory cell infiltrate of lamina propria composed of chronic inflammatory cells in form of lymphocytes as in Fig. (3).

Occludeddd uterine tube revealed 0.25% as in Fig. (4). The percentage being lower than the percentage recorded by several authors (Kessy and Noakes, 1985; Chaudhari and Paul- Bokko, 2000; Shivhare *et al.*, 2012) were 12.4%, 1%, 15.2% respectively. In Iraq, the rate of percentage in this study is lower than the rate recorded by Ali, (1989) which was 8.61% and the rate reported by Alwan, (1990) which was (4.2%) and Azawi *et al.* (2008) observed 1.5%. Uterine tube adhesion revealed 0.74% as in Fig. (5) which represented by adhesion between mesosalpinx and perisalpingial tissues.

The percentage of hemosalpinx in this study recorded 1.48% as in Fig. (6). It is higher than the percentage of Herenda (1987) which was 0.06% while it is lower than the percentage reported by Fathalla *et al.* (2000) which was (2%). Hemosalpinx is characterized by thickening the wall of uterine tube due to filling with bloody discharge, which is in agreement with Azawi *et al.* (2008). In Iraq the percentage of present study is higher than the percentage of (Ali, 1989; Azawi *et al.*, 2008). The histopathologically section, is in agreement with Azawi *et al.* (2008) which showed the uterine tube with stromal hemorrhage in the core of the villus like folds of epithelium as in Fig. (7).

Mesosalpinx cyst showed an percentage 0.74% as in Fig. (8). The cysts found on mesosalpinx were (0.5-0.7) cm in diameter. Microscopically, present study describes a cyst called paramesonephric cyst which is a remnant of paramesonephric (Mullerian) duct system as in Fig. (9). Schlarfer and Miller, (2007) state that these cysts do not appear to have any effect on fertility but cyst formation may be associated with hormonal dysfunction, and Tsumura *et al.* (1982) reported that cyst formation in the uterine tube was most frequently seen in the fimbriae in cows and in the mesosalpinx in sows, and they also describe that the sex hormones and oviductal constrictions might cause oviduct cysts.

Nodules on mesosalpinx revealed 0.74% as in Fig. (10). McEntee, (1990) described that nodules are found occasionally in the mesosalpinx of queen, bitch, cow, and mare, relatively few of the nodules are large enough to be recognized readily on gross examination.

Cyst on uterine tube wall reveals 0.25% of cyst related to the wall of uterine tube as in Fig. (11). The percentage of present study is similar of the percentage observed by Kessy and Noakes (1985) which is 0.25% and is lower than the value of 16.5%, and 4.6% which is reported by Tsumura *et al.* (1982) and Kunbhar *et al.* (2003) respectively. The result agrees with McEcntee (1990), who states that these cysts are so close to or adjacent to the uterine tube. Kessy and Noakes (1985) that a single mucosal cyst which caused partial occlusion of the tube.

Microscopic examination, that was paratubal paramesonephric cyst also called Hydatid of Morgangni, showed single layer of tubal type ciliated columnar epithelium resting on fibrous tissue of the normal uterine tube as in Fig. (12), this is agreement with McEntee, (1990).

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دراسة مرضية لقناة البيض في الأبقار غير الحوامل المذبوحة في محافظة السليمانية

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تضمنت الدراسة على جمع ٤٠٤ نماذج من الاجهزة التناسلية لأبقار غير الحوامل من مجزرة العصرية بمنطقة (قرة طول) في محافظة السليمانية إقليم كردستان العراق ، أظهرت نتائج الدراسة ٢٠٦ (٤١%) من النماذج خلال الفحص العياني بأنها سوية ولا تعاني من حالات مرضية بينما ١٩٨ (٤٩%) من النماذج عانت من حالات مرضية غير سوية للمبايض وقناة البيض ١٩.٣٠% سجلت أعلى النتائج للحالات المرضية في المبايض بنسبة ٢٩.٧٠% وقناة البيض بنسبة ١٩.٣٠%. أظهرت نتائج الدراسة لحالات غير السوية لقناة البيض والتي تضمنت على التهاب قناة البيض بنسبة ٩.١٥% وتقيح قناة البيض ٤.٢١% ونزف قناة البيض ١.٤٩% وضمور قناة البيض ٠.٩٩% والتصاقات قناة البيض ٠.٧٤% وتكيس قناة بيض ٠.٧٤% ووجود عقيدات في قناة البيض ٠.٧٤% وضمور جزء من قناة البيض ٠.٥٠% وانسداد قناة البيض ٠.٢٥% وقناة بيض مزدوج ٠.٢٥% وجود كيس على جدار قناة البيض بنسبة ٠.٢٥% اتضح من الدراسة بأن الفحص النسيجي لحالات التهاب وتقيح قناة البيض مع وجود انتشار كثيف لخلايا التهابية مثل غلايا اللمفية و neutrophil وقد أستنتج من الدراسة وجود حالات مرضية غير سوية لقناة البيض في الأبقار المذبوحة بنسبة ١٩.٣٠%.