Study of some abnormalities in the reproductive system of ewes in Basra province

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Abstract: The aimed of study to examined female reproductive system grossly and histopathological to study of lesion causes infertility or sterility in ewes. This study was conducted on the genital tract of 80 ewes in Basra province. The specimen were randomly collected from Basra slaughter house of different areas of Basra city (Qurna, Zubear, Karma Ali, Abu AL khasab, Hayaniya, alder, Shatt al-Arab) within the period from October 2014 to January 2015. The gross examination of collected specimen was confirmed histologically, pathological changes were found in 28 (35%) of the total cases. and 52 (65%) samples normal. Uterine abnormalities comprised (57.14%) , whereas ovarian abnormalities comprised (39.29%) and oviduct abnormalities were (3.57%). The commonest pathological conditions of the uterus was endometritis which comprised (42.86%) of pathological conditions, followed by freemartin (14.29%) , these percentages from abnormal cases. The commonest abnormalities of the ovary were ovarian cysts (25%), followed by Para ovarian cysts (14.29%) (3.57%). The abnormalities of the oviduct were less common Paraoviduct, these percentages from abnormal cases.

Key words:-Reproductive tract, congenital anomalies, ovary, uterus, oviduct, ewes.

1. Introduction: Abnormalities of goat reproductive organs have a significant effect on its fertility [1]. Reproduction in goats defined as seasonal, various factors affecting the seasonality include latitude, climate, breed, physiological stage, presence of male, breeding system, and specifically photo period [2]. In general, the breeding season starts in autumn and ends in winter, with anoestrus in spring/summer [3].

Ewes are fertile small ruminants characterized by give twin in birth always. They are used to production milk, meet and wool mainly. Genital abnormalities play an important role in ewes breeding either by causing infertility or sterility[4]. Higher incidence of gross genital
abnormalities in ewes were earlier reported in the UK 23.2% [5], Iran 25.8% [6], Ethiopia 22.2% [7] and Iraq 25.7%. A lower incidence of Nigeria 3.3% [8] and 16.6% Ethiopia [9].

Reproduction of the goat is the immediate importance to the goat keepers because it has a high fertility rate and produces much young in a year [10], [11]. The genitalia from 340 goats were 126 (37.05%) were pregnant, 127 (37.35%) genitalia with gross. The gross and pathological abnormalities of reproductive organs have been surveyed and reviewed by various authors, macroscopic abnormalities in pregnant and non-pregnant Iraqi goats were 14.69%[1]; [12].

Endometritis is the most common finding of uterine abnormality indicating that this condition plays a more important role in infertility. Endometritis in ewes, as in cattle, is most infiltration of lymphocytes and plasma cells associated with gland atrophy, per glandular and perivascular fibrosis, and lymphoid follicle formation [13]. Cysts on the ovaries can appear on one or both ovary and are usually thin-walled, fluid-filled structures. They are the result of follicles that fail to ovulate. This condition seems to be more common in goats than in sheep, causative agents high estrogen intake, and possible phosphorus deficiency, genetic predisposition, and stressful conditions or other health problems during the birthing process or postpartum interval may cause cysts to develop on the ovaries. In goats, genetics seem to play a dominant role [14].

There are other causes of endometritis are most common in luteal phase or postpartum and induces embryonic loss as a result of uterine tissue disruption or direct embryo cytolysis [15]. In addition, the absorption of bacterial components can prevent the growth of graffian follicles and ovulation [16]. Lymphoplasmacytic endometritis may be associated with persistent infection of chlamyphila psittaci, targeting the endometrial cells of the basal stroma. This abnormality was reported as uncommon condition in ewe and ranged from 0.46% to 3%. The incidence of pyometra in the present study also similar to other reports. It is an uncommon condition in ewe caused by Escherichia coli infection, in association or not with other bacteria. The accumulation of thin or viscous fluid in the uterine lumen or hydrometra is a significant factor in infertility and subfertility. Melanin deposits without pathologic significance were commonly reported in both ewes and nulliparous sheep [10], [17], [18], [19] and [20]. The work aimed to study lesion of female reproductive system grossly and histopathological changes which causes infertility or sterility in ewes.

2. Materials and Methods

2.1 Sample collection:

The current study was carried on (80 samples) within the period from October 2014 to January 2015 of the female genital tracts (ovary, oviduct and uterus) of the ewe intended for slaughter in the Basrah slaughterhouse and Different areas of Basra province (Qurna, Zubear, Karma Ali, Abu AL khasab, Hayaniya, alder, Shatt al-Arab).

The samples were collected (taken directly after slaughter *) in plastic containers and transferred to the College of Veterinary Medicine, Basra University, during a brief period after the slaughter was carried out tests.
At the beginning the genital tract was washing and cleaned, the uterus and oviduct was examined from the outside and inside to see any congenital malformation or pathological defects. The measurements of the ovaries, uterus and oviduct was then taken and Photo to the sample by digital camera. Sample of lesions were then fixed in 10% formalin and prepared for histopathological technique and microscopic examination.

2.2 Histopathology procedure:

After three days of fixation (10% formalin for 48 hrs.), the specimen was dehydrated in descending concentration (50%, 70%, 95%, 100% and 100%). The specimens were then passed through graduated alcohol percentage (70%, 80%, 90%, 100% and 100%) cleared with xylene solution and embedded with paraffin wax. The blocking tissue was then cut by microtome at 5 μm thickness. After that sliced paraffin block was placed gently in warm water bath (37°C), places on albumin slid, stained with hematoxylin and eosin, and examined by a light microscope [21].

3. Results: Eighty samples of ewes reproductive system collected from different areas of slaughter Basra city. The current study showed 52 (65%) normal, while 28 (35%) abnormal. The gross and histopathological examination of the cases are shown in Table (1,2).

3.1 Pathological conditions classified as following:

3.1.1 Endometritis: Comprised twelve (15%) of total cases as shown in table (2). Characterized grossly with external change swelling, congestion and hemorrhagic spots of varying size were seen on the endometrial surface as in (Fig. 2&3) compare with normal tract in (Fig.1). Microscopic examination revealed hyperplasia of epithelium cells, edematous and severe congestion associated with infiltration of inflammatory cell (Fig. 8), narrowing of uterus lumen due to thick wall, hemorrhagic, and vacuolated of uterus muscle and congestion of blood vessels (Fig. 9,10,11,12,13).

3.1.2 Freemartin: Showed in four specimen (5%) of total cases in Table (2). The condition is characterized by changes in female reproductive organ such as differentiation of ovaries into testes tissue or even have of reproductive organ or both sexes. Grossly examination showed small ovary and no uterine body or cervix (Fig. 7).

3.1.3 Cystic Corpus Luteum: Occur in seven cases (8.75%) of total cases as shown in Table (2). Grossly the follicular wall characterized from small central cyst that can occur normally in a corpus luteum, its irregular cyst develop (Fig.4) Microscopic examination showed cyst surrounded by inflammatory cell and necrotic area (Fig. 17,18).

3.1.4 Paraovarian cyst: Four cases were found (5%) of total cases as in table (2). Grossly showed thin walled and varied size (3-9) mm (Fig 5). Microscopic examination showed vacuolated of epithelial cells, swelling of strome cells (Fig. 14), cells with degenerative change (Fig. 15) and excessive amount of blood vessels (Fig. 16).
3.1.5 Paraoviduct cyst: Case (1.25%) of total as in table (2) and as show in (Fig.6) Microscopic examination show cyst full with adipose tissue and the oviduct is contain folded connective tissue (Fig.19).

Table 1: Ratios and the number of normal and abnormal cases.

| Samples           | Number | % Of total |
|-------------------|--------|------------|
| Normal cases      | 52     | 65 %       |
| abnormal cases    | 28     | 35 %       |
| Total             | 80     | 100 %      |

Table 2: Frequency distribution of pathological conditions.

| Pathological conditions | number | % of total | % of Pathological conditions |
|-------------------------|--------|------------|------------------------------|
| Endometritis            | 12     | 15%        | 42.86%                       |
| Cystic Corpus Luteum    | 7      | 8.75%      | 25.00%                       |
| Freemartin              | 4      | 5%         | 14.29%                       |
| Para ovarin cyst        | 4      | 5%         | 14.29%                       |
| Para oviduct cyst       | 1      | 1.25%      | 3.57%                        |
| Total                   | 28     |            |                              |

Note: Freemartin don’t send to histological technique
Fig (1) Show the normal uterus: ovary (a), oviduct (b), uterine horn (c), uterine body (d), cervix (e).

Fig. (2) Uterus showing endometritis with thickening of the uterine wall (a).

Fig (3) Uterus show Endometritis after opening congestion (arrow).

Fig (4) uterus showing Cystic Corpus Luteum (arrow).

Fig (5) Uterus show para ovarian cyst (a).

Fig (6) uterus show Para oviduct cyst (arrow).
Fig (7) show the uterus with freemartin show small ovary (arrow) and no uterine body or.

Fig (8): A section of ewe uterus showing odematous fluid (a), hyperplasia of epithelium (b) and thickening of uterus wall (c) (H&E 4X).

Fig (9): A section of ewe uterus showing odematous fluid in intersticial tissue (a) degenerative lining cell of uterine gland (d) and haemorrhagic area (h) fibrosis in endothelium (f). (H&E 4X).

Fig (10): A section of ewe uterus showing narrowing (n) uterus horn lumen due to thick wall (t) and haemorrhagic area (h) (H&E 4X).

Fig (11): A section of ewe uterus showing fluid area (f) and inflammatory cells (i) (H&E 4X).
Fig (12): A section of ewe uterus showing fluid area (f) and inflammatory cells (I) (H&E 4X).

Fig (13): A section of ewe uterus showing hyperplasia of endometrium (h), oedematous fluid (f) and inflammatory cells (i). (H&E(10X)).

Fig (14): Para ovarian cyst show vacuolated of epithelial cells (v) and swelling of strome cells (s). Para ovarian cyst embedded with in a loose c.t of broad ligament show muscle bundle. The cyst surrounded by a fibromuscular thick wall lined by simple epithelium (H&E 10X).

Fig (15): Para ovarian cyst show the cells with degenerative change & proliferative of bundles collagen. Para ovarian cyst embedded with in a loose c.t of broad ligament show muscle bundle. The cyst surrounded by a fibromuscular thick wall lined by simple epithelium (H&E 40X).
Fig (16): para ovarin cyst show excessive amount of blood vessels. para ovarian cyst embedded with in a loose c.t of broad ligament. show muscle bundle. the cyst surrounded by a fibromuscular thick wall lined by simple epithelium (H&E 10X)

Fig (17): A section of ewe uterus show dilation of blood vessels (d), inflammatory cells (i) and Cystic Corpus Luteum (c) (H&E 10X)

Fig (18): show Cystic Corpus Luteum surrounded by inflammatory cells (H&E 10X)

Fig (19): show paraoviduct cyst with oviduct(O) and cyst(C).
4. Discussion: In the present study, showed incidence of gross genital abnormalities in ewes were earlier reported in the UK (23.2%) [5], Iran (25.8%) [6], Ethiopia (22.2%) [7] and Iraq (25.7%) [22]. A lower incidence of 3.3% [9], 6.52% and 16.6% [23] have also been recorded and the differences may be due to nutrient, breed and the environmental variations in different places.

Reproductive wastage due to mortality, morbidity and poor reproduction significantly reduce flock productivity and may make small ruminants rearing uneconomic [9]. In the present study, the percentage of abnormal cases (35%) was less than previous study [22] who reported (78.2%) in middle Iraq. Endometritis was the most common finding of uterine abnormality indicating that this condition plays a more important role in infertility due to metritis, pyometra, hydrometra, papillary hyperplasia of endometrial epithelium, endometriosis, fatty change of endometrial and myometrium cells [23]. This abnormality was associated with endometrial hyperplasia [24], or postpartum and induces embryonic loss as a result of uterine tissue disruption or direct embryonic cytolysis [15], [25]; [26]. In addition, the absorption of bacterial components can prevent the growth of Graffian follicles and ovulation due to infiltration of lymphocytes and plasma cells associated with gland atrophy, periglandular and perivascular fibrosis, and lymphoid follicle formation [16]. Therefore, this case record in the present study was (12%) less than [22] who reported (55.7%) and [10] who found (40%) in middle Iraq and similar to condition reported by [27] who found (13.7%) and more than [18] who recorded (2%) in Turkish.

Paraovarian cysts in the present study were (5%) similar to [28] who found (5%) and [29] who reported (4.9%) and more than that of similar condition reported by [30], [31], [22], [32], [33], [34] and [35] who reported (1.32%), (0.28%), (2.7%), (0.4%), (2.41%), (2%) and (2.48%) respectively. [36] showed that paraovarian cysts are less common in cows than ewes. Paraovarian cyst was seen in cases of the present study. Common ovarian congenital lesions observed during abattoir surveys are cystic lesions near ovary and uterine tubes, derived from remnants of paramesonephric or mesonephric structures [28]. Paraovarian cysts are commonly found at either cranial or caudal pole of the ovary and arise from either the cranial or caudal segments of the mesonephric tubules. The cysts cause infertility if they compress the uterine tube or block the fimbrial ostium [37]. In the reports, the incidence of luteal cysts is highly variable [11]. Acquired cystic ovaries arise as a result of anovulation whereby, instead of regression, follicles continue to increase in size and persist Follicular and luteinized cysts likely represent different manifestations of the same condition, so that the previously known luteal cysts are now designed as luteinized-follicular cysts [38]. The prevalence of uterine lesions such as endometritis and pyometra is significantly higher in ewes with ovarian cysts than in those with normal ovaries [39].

Cystic corpus luteum cannot be differentiated grossly from non-cystic and their central cavity in this study was (5-6 mm in diameter) slightly differed from [40] (5-8 mm) in cow. Some authors regarded the cystic corpus luteum as non-pathologic and have no effect on the estrus cycle and secrete enough progesterone to maintain the pregnancy [11] and [41].

Also have been recorded and the differences may be due to sample size, breed and the environmental variations in different places. Cystic ovarian disease has been described mainly
among dairy goats especially those grazing oestrogenic pastures. Ovarian bursal adhesions involve the formation of fibrous tissue across the ovarian bursa which in severe cases obliterates its cavity[42]. They usually follow inflammatory processes in and around the ovary [43]. Where the ovarian bursa is completely adhered to the ovary and sometimes the fallopian tube interference with ovulation and salpingeal occlusion may ensue. The later predisposes to development of bursal cysts, hydrosalphinx and pyometra.

Abnormalities of the reproductive tract of female sheep resulting in subfertility infertility or sterility cannot easily be detected by routine clinical examination. There is relatively little published information in sheep about causes of the reproduction failure than direct nutritional or infections causes have been implicated[23],[44],[45] and[46].

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