

Hydrosalpinx and hydrobursitis in infertile goats

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Received: 22.08.2009

Abstract: Five adult female goats were brought to our veterinary hospital with infertility. Ultrasonography showed what seemed to be hydrometra or cystic lesion in the genital region of 18-month-old twin local breed female goats. After slaughter of the does and excision of the genital tract, a macroscopic examination revealed bilateral hydrosalpinx and extreme dilation of the ovarian bursa with complete capsulation of the active ovary in the cystic ovarian bursa on each side. Amber to dark brown fluid fully filled the oviduct and the cystic structure of the ovarian bursa. Microscopically, the ovarian bursa showed an obvious chronic inflammation and an increase in the connective tissue. The oviduct revealed either no mucosal folds or semi-flattened mucosal folds. The possible causes of this pathological case and its significance are discussed in this report. We claim that this pathological condition has not been reported before in goats.

Key words: Hydrobursitis, hydrosalpinx, goat, pathology, infertility

Introduction

Reporting the genital abnormalities and knowing their effect mechanisms on the fertility of female in human and animal have been of interest for researchers for over many decades. One of these well-known abnormalities is hydrosalpinx, which is considered an important cause of impairment or reduction of pregnancy rate in human and animal by many mechanisms, which range from negatively affecting the gametes and fertilization to lowering endometrial receptivity (1).

Some authors reported a significant and interesting abnormality; accumulation of fluid in the ovarian bursa in camel with encapsulating of the

ovary, which is called hydrobursa or hydrobursitis (2). Many studies also reported encapsulating of ovary in fibrous bursa in other domestic animals without recording any extreme dilating of the ovarian bursa due to accumulating fluid (3). As the pathogenesis of encapsulation of the ovary is inexplicit, it is discussed on basis of some theories; however, negative effect of ovarian bursal disorder on the reproductive success is rated as significant (4,2).

The aim of this case report was to describe hydrosalpinx and hydrobursitis in infertile twin goats. Particularly pathological reports on goats are uncommon and this condition has not been reported in the goat before.

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Case history

Five local female goats aged 18-27 months were brought to hospital of the veterinary medicine faculty, Basrah University with a history of infertility and inefficacy of long-term hormonal treatment. Apart from infertility, no other clinical signs or symptoms were noticed. On examination, a transrectal ultrasonography image showed in the 18-month-old twin goats a non-echogenic fluid-filled structure, which was suspected as hydrometra or a cystic lesion. After a discussion about the treatment options, the owner decided to slaughter the twin goats and an arrangement was made to have the genital tracts examined.

The macroscopic examination details of the genital tracts were recorded and a sample from the uterus, oviduct, and ovarian bursa were fixed in neutral buffered formalin 10%. The routine histopathological technique was followed and the sections were stained with Haematoxylin and Eosin (H&E).

Results and discussion

Grossly, one of these genital tracts showed bilateral hydrosalpinx and the oviduct attached longitudinally to a tensioned spherical to ovoid cyst (9 cm × 7 cm × 4.5 cm) (Figure 1). The cyst wall was a little rough from outside, while very smooth from inside. The oviduct and the cyst were fully filled with clear amber to dark brown fluid (about 95 mL in each side). The



Figure 1. A gross appearance of bilateral hydrosalpinx and fluid filled dilated ovarian bursa with complete encapsulating of the ovaries inside the cysts.

fluid color was inconsistent, which was darker in the cyst than in the oviduct.

Each ovary was encapsulated completely in the cyst and attached to the inner surface of the cyst by a thick fibrous tissue. Two corpora lutea in the right ovary and secondary follicles in the left ovary were observed. The broad ligament could not be recognized on either side.

The other genital tract also showed bilateral hydrosalpinx and cystic dilation in the oviduct; however, there was no adhesion between the oviduct and the cyst. There was light amber fluid in both oviducts and cysts (75 mL in each side). Each ovary encapsulated completely in the cyst and appeared corpus luteum on its surface.

Histologically, the both genital tracts revealed the same features. The oviduct markedly dilated that the lowest microscopic magnification could not show all the lumen. There was dedifferentiation of the lining cells and a sharp reduction in height of the mucosal folds, which appeared to be nearly flattened (Figures 2 and 3). An increase in the connective tissue

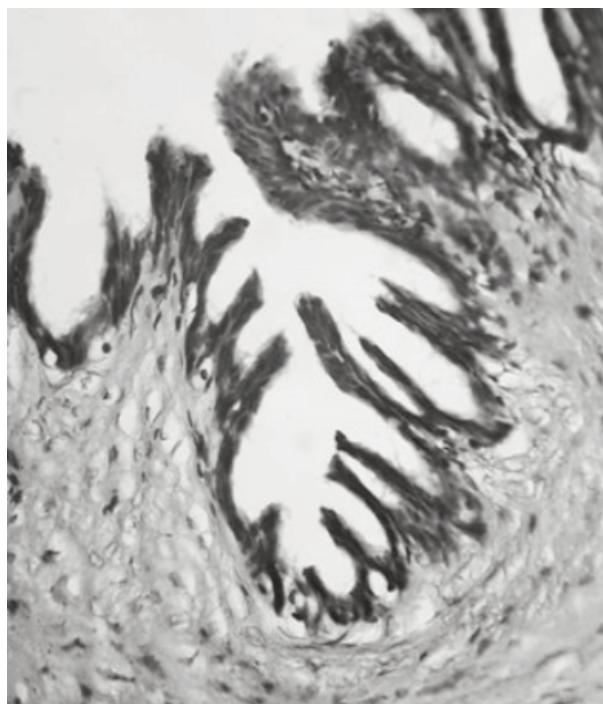


Figure 2. Microscopic features of the oviduct with compression of the epithelium cells and loss of the cilia. (H&E X400).

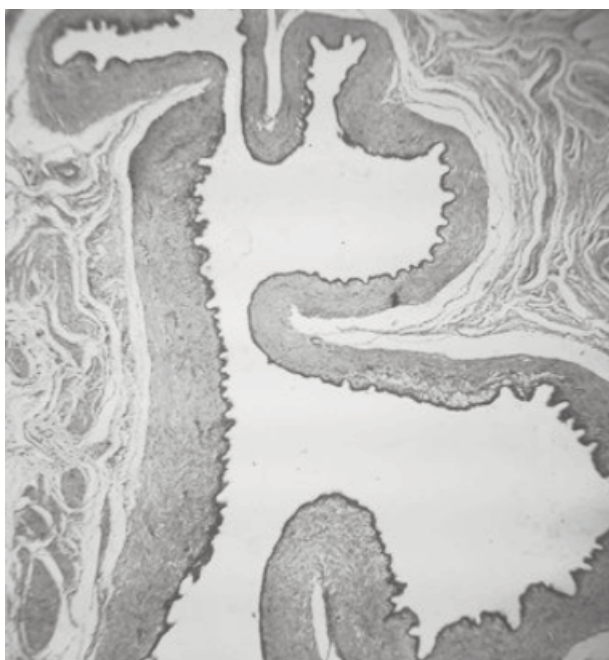


Figure 3. Microscopy appearance for an extreme dilation of the oviduct lumen and edematous muscular layer. (H&E X40).

component was also noticeable and the muscular layer showed a remarkable edematous feature. The cystic lesions revealed ploughing of endothelial cells and infiltration of mononuclear inflammation cells, which also formed a few small aggregations in the stroma (Figure 4). The stroma prominently consisted of thickened fibrous tissue, whereas the muscular layer showed a significant thinning. The uterus showed insignificant change, except degenerated neutrophils due to what appeared to be an old inflammation.

Hydrosalpinx varies in its dilating intensity depending on whether the both oviducts' ends obstructed or one of them and whether the obstruction is complete or incomplete (5). The extreme dilatation in this case suggests a complete blockage of the oviduct's ends due to what seemed chronic inflammation and a long-term fibrosis, which often combines with hydrosalpinx (6). Some studies reported bacteria and *Chlamydia psittaci* as a predisposing factor for hydrosalpinx (6,7).

In light of the presence of lymphocytic cells in the oviduct and the bursa stroma, the author believes that

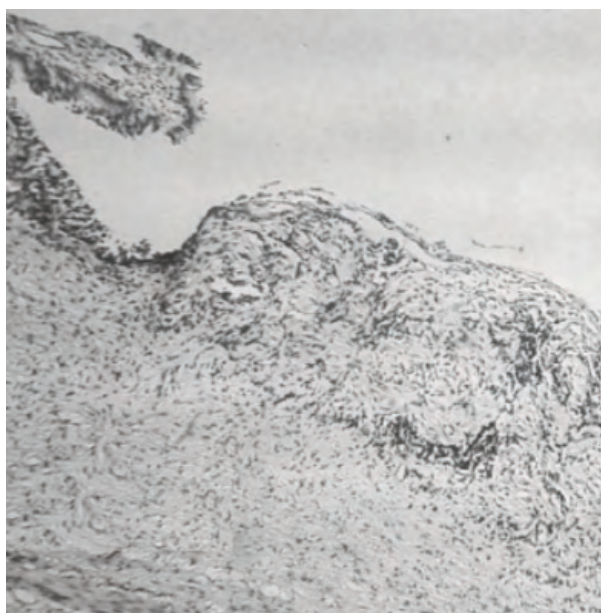


Figure 4. Histological details showing the ovarian bursa with unusual thickening of the connective tissue and sloughing of the epithelium cells. (H&E X100).

the cyst originated from the dilation of the ovarian bursa after enveloping of the ovary as a result of an extensive ovarobursal adhesion.

The amber color of the fluid probably indicates to occurrence of hemorrhage; red blood cells were found in the fluid, which is in agreement with the findings of Tibary and Anouassi (2), who stated that the amber color of the fluid in hydrobursitis is a consequence of mixture of blood and ovarian follicle fluid. In addition, Stevens et al. (8) believed that the amber color in the ligated uteri in their study was an evidence for the presence of red blood cells.

Cystic ovarian bursa has been reported in bovine and porcine but without being the ovary enveloped completely in the cyst (drostproject.vetmed.ufl.edu).

Unrecognizing of the broad ligament and adhering of the oviduct to the cyst in 1 of the 2 cases supported the author's belief that inflammation with extensive adhesion maybe involved the oviduct, ovary, and the broad ligament. However, occurrence of hydrobursitis in twin goats leads to another suggestion; genetic factors may have a significant effect, which probably is involved with the chronic inflammation in the development of hydrobursitis (2).

After observing active ovaries in this genital tract, we suggest that the infertility of the does was due to the oviductal and the bursal disorder and this is in consistent with the findings of Tibary and Anouassi (2), who showed an increase of hydrobursitis rate in the camel with a history of reproductive failure and a higher long-standing infertility rate in bilaterally affected cases.

Tibary and Anouassi (2) attributed hydrobursitis in camel to a number of factors, which are ovarobursal adhesion and recurrent anovulation, uterine and oviduct lesions, and genetic predisposition.

Based on the results of the present study (and as there is no document about hydrobursitis in the goat),

we presume that the cause for this condition in these goats is the same as in the camel.

We argue that the present case is bilateral hydrosalpinx and hydrobursitis in goats with complete encapsulating of the ovary in a fluid filled cystic ovarian bursa. To the author's knowledge, this case has not been reported in the goat before.

Acknowledgement

I would like to thank the technician staff at the veterinary hospital. I also express my appreciation to Mr. Chris Butt at Ultimo College, NSW-Australia, for reviewing this research linguistically.

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