Unusual Multiple Abnormalities in a Bovine Reproductive Tract

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Not all genital disease in cattle, whether congenital or acquired, can be diagnosed by the usual clinical methods. Studies on slaughterhouse materials can be very useful in detecting certain diseases that may be missed by the practicing veterinarian. The examination of 228 bovine reproductive tracts at the slaughterhouse revealed 7.8% were abnormal on gross examination.[1] In another study of 500 specimens to determine the incidence of ovarian diseases, 2.8% and 1% of the reproductive tracts exhibited ovarian cysts and paraovarian cysts, respectively.[2] Congenital abnormalities such as Bartholin gland cyst in a cow have also been associated with ovarian cysts of cows.[3] In our two previous surveys, we have not observed multiple abnormalities in the reproductive tracts of cows.[1,2]

The objective of this report is to provide macroscopic description of a Gartner's duct cyst, ovarian cyst, paraovarian cyst and a parametrial abscess as well as hemorrhagic cystitis in the reproductive tract of a cow slaughtered at Irbid slaughterhouse. The macroscopic appearance and histopathologic lesion of a perimetrial mass are also described. This reproductive tract was found in a four-year-old Friesian cow during a biweekly visit to Irbid slaughterhouse. Detailed visual and manual examinations of all organs of the tract were performed. Examination of the vagina revealed an enlarged and dilated right Gartner's duct cyst (Figure 1). It was 18 cm long, tortuous and visible in the vaginal floor. The duct was segmental (5 segments) with the largest segment being found in the vicinity of the cervix and the smallest one in the floor of the vestibulo-vaginal border. Pressure exerted on one of these segments resulted in the enlargement and bulging of the adjacent ones. There was no congestion, necrosis or ulceration seen in the duct or in the vagina and cervix. The cervix was closed but there was purulent material in its outer ring and on the floor of the vagina. The purulent material perhaps originated from Gartner's duct. The fact that the right duct only was affected and not the left duct is unclear. We have observed four cases of cystic

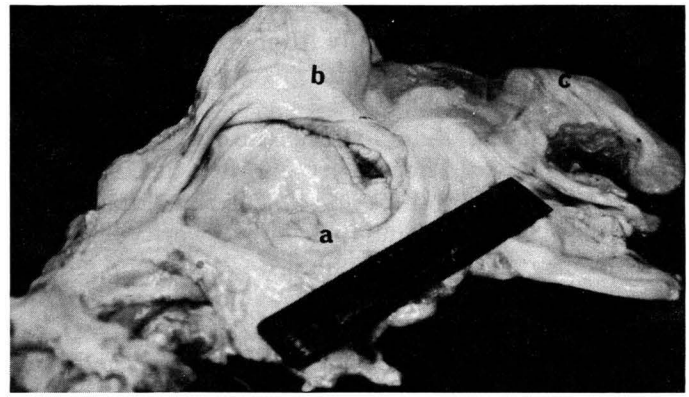

Figure 1. The whole reproductive tract of a cow is shown. The segments of Gartner's duct (5 segments) are indicated by the letter "a" and are found in the floor of the vagina. The largest segment is located close to the cervix. The abscess is indicated by the letter "b". It is located and adhered to the left horn. The right horn is indicated by the letter "c".

Bartholin gland which were unilateral in all cases.[3] However, bilateral involvement of the Bartholin gland was also observed in two goats (unpublished observation).

Examination of the uterus revealed a palpable mass at the bifurcation of the uterine horns. This mass was encapsulated, movable, and easily enucleated from the perimetrium. No protrusions or extensions of this mass to the myometrium or to the endometrium were observed macroscopically. The tumor was almost oval in shape and weighed 50 grams. It was 5 cm long and 2 cm in diameter. In cross section, the central region of the tumor was red, firm, and well vascularized with a few cavities of different sizes. The peripheral region was white with a smooth surface. The border between the central and the peripheral region was not well demarcated. Histopathological sections from this mass revealed the presence of granulation tissue infiltrated with lymphocytes, fibrin, collagen. Neoformations of blood vessels were also abundant. The cavities which

were seen macroscopically were filled mainly with fibrin and polymorphonuclear (PMN) cells. Necrotic foci surrounded by mononuclear cells and fibroblasts were found also in the granulation tissue. Some of the blood vessels were inflamed and hyaline/fibrinoid necrosis was evident.

In the left ovary, there was one small follicular cyst with translucent thin walls, 3-5 mm in diameter (not shown). A small paraovarian cyst was also observed in the vicinity of the left ovary. The left horn, especially the portion which is close to the ovary, was tortuous and adhered to a large abscess which was 16 cm in diameter. Careful dissection of the horn from the abscess showed that the horn was intact and had an open lumen. The adhesions affected only one side of the horn. The abscess was located between the left horn cranially and urinary bladder caudally. After opening the abscess, we found that one of its walls was shared with the urinary bladder. This wall was 2-3 cm thick and had smooth surfaces on both sides. Almost 500 ml of pus was drained from this abscess. The two ureters were fused with the dorsal wall of the abscess and at this point the walls of the ureters were thin and their lumen were very small. The urinary bladder epithelium was thick and smooth with focal hemorrhage. There was no obvious obstruction in either ureter.

Follicular cysts are relatively common conditions affecting the reproductive tracts of cows but cysts of Gartner's ducts are relatively uncommon.[2] The unusual multiple abnormalities of the bovine reproductive tract described in this report are of interest. The Gartner's ducts (Wolffian vestiges), which lie on the vaginal floor are normally invisible, but microscopically are either continuous or discontinuous ducts lined by simple cuboidal epithelium. When there is chronic stimulation with estrogen, such as from the ovarian follicular cyst presented in this case, the Gartner's duct become cystic and dilated as well as visible and palpable; they appear as a series of blebs or tubules up to 1.0 cm in diameter in the floor of the vagina.[4] It would be more useful to have histopathological studies on such cystic structures in this tract but this was not carried out unfortunately in our case. Chronic stimulation by estrogen has been shown to result in the development of not only Gartner's duct cysts but also cystic Bartholin's glands.[4] However, the latter condition was absent in our specimen. Both types of cyst have been reported to become abscessed.[4]

Uterine and parauterine abscesses have been uncommonly observed.[4] The abscesses are thought to follow metritis (small abscess) or localized traumatic injury (large abscess) to the infected endometrium. There appears to be a relationship between the frequency of abscesses and uterine manipulation involving the use of instruments such as insemination pipettes and uterine catheters. Local peritonitis could also induce uterine and parauterine abscesses. The large abscess seen in this case was most likely the result of traumatic injury to the infected uterus that localized in the parauterine region in the broad ligament. However, abscesses which develop following traumatic injury were generally in the uterine body.[4]

In summary, six unusual combined abnormalities are described in a bovine reproductive tract. The enlargement of Gartner's duct was attributed perhaps to the prolonged effect of high estrogen levels from an ovarian cyst. The abscess and the granulation tissue probably resulted from uterine manipulation due to the use of instruments.

References

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