

## Tumours of Genital Tract in Livestock and Companion Animals

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### Article History

Received: 15. 09.2022

Revised: 22. 09.2022

Accepted: 24. 09.2022

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### INTRODUCTION

A tumour is a solid mass of tissue that forms when abnormal cells group together. Tumours can affect bones, skin, tissue, organs and glands. Many tumours are not cancer (they're benign). But they still may need treatment. Cancerous, or malignant, tumours can be life-threatening and require cancer treatment. What's the difference between a tumour and a cyst? A tumour is a solid mass of tissue. It may or may not be cancerous. A cyst is a small sac that may contain fluid, air or solid material. The majority of cysts are not cancerous.

A tumour may be: **Cancerous:** Malignant or cancerous tumours can spread into nearby tissue, glands and other parts of the body. The new tumours are metastases (mets). Cancerous tumours can come back after treatment (cancer recurrence). These tumours can be life-threatening. **Noncancerous:** Benign tumours are not cancerous and are rarely life-threatening. They're localized, which means they don't typically affect nearby tissue or spread to other parts of the body. Many noncancerous tumours don't need treatment. But some noncancerous tumours press on other body parts and do need medical care. **Precancerous:** These noncancerous tumours can become cancerous if not treated.

**What causes a tumour?** Your body is constantly making new cells to replace old or damaged ones that die off. Sometimes, the cells don't die off as expected. Or, new cells grow and multiply faster than they should. The cells start to pile up, forming a tumour.

Tumours of the female genital tract in cattle have been reported from various regions of the world. These tumours are divided into two categories: those arising from the ovaries and those that are derived from the tubular genitalia (fallopian tube, uterine, cervical, and vaginal and vulvar tumours)

Ovarian tumours are relatively frequent in animals, especially in bitches, cows and mares, while the tumours of the other anatomical segments of the female genital system (oviduct, uterus, cervix, vagina and vulva) have a significantly lower incidence. It is important to recognize whether these neoplasms are benign or malignant, and to differentiate between them and other conditions, such as hyperplasia and granulation tissue (Kang & Holmberg, 1983).

Male genital tract tumours in animals are grouped as penile and preputial tumours, testicular and epididymal tumours, and prostate tumours.

The majority of diagnosed vaginal and vulvar tumours are fibropapillomas. A fibropapilloma is the most common neoplasm of the vulva in cattle and can be caused by the bovine papillomavirus. Other vaginal and vulvar tumours include leiomyomas, leiomyosarcomas, fibromas, fibro sarcomas, fibroleiomyosarcomas and squamous cell carcinomas. All squamous-cell carcinomas are observed on the vulvar skin, as cauliflower-like masses. Fibromas, fibro-papillomas and fibro-sarcomas are often mushroom shaped, and are attached either by a broad base or by a long pedicle that allowed some of the tumour to protrude out of the vulva.

Ovarian tumours are essentially divided into epithelial, gonadal stromal and germ cell tumours. Gonadal stromal tumours may be hormonally active producing steroid hormones, while the ovarian tumours without endocrine activity is of little clinical significance in cattle. Gonadal stromal tumours include granulosa cell tumours, thecomas and luteomas and occur in cattle of all ages. A granulosa cell tumour is the most common ovarian tumour in cattle and is usually unilateral. This granulosa cell tumour may cause occasional symptoms of either nymphomania or anestrus. The early stages of these tumours usually pass unnoticed and by the time clinical symptoms of pelvic relaxation and oedema of vulva are common on rectal

examination will reveal the nature of the condition by the presence of an abnormally large ovary (3 inches or 7.5 cm in diameter) usually pulled forward and downward in the abdominal cavity. The ovarian artery to the diseased ovary is usually enlarged. Removal of the diseased ovary is indicated in some cases (Roberts, 1971). Any cyst larger than 4 inches or 10 cm should be suspected of being a granulosa cell tumour. This granulosa cell tumour is the most common one in cattle. It is rarely malignant and seldom spread to adjacent peritoneal surface. Some of these tumours may produce oestrogen and symptoms of nymphomania, relaxation of pelvic ligament and lactation in heifer (Roberts, 1971).

Tumours of the ovaries and genital tract of the ewe are rare. There are reports of leiomyomas affecting the uterus of sheep. The genital tract tumours in goats are extremely rare.

**Tumour of genital tract in dogs** are common but rare in the cat. Granulosa cell tumours are the most common neoplasms of the dog's ovary. Most of the bitches affected with this type of tumours are reported of having cystic hyperplasia of the endometrium with varying amounts of uterine mucus and lesions of advanced metritis and pyometra. The largest tumours measured 11x 9 x5 cm and weighed 213 grams has been reported in dog. The tumours growths were irregular in shape, encapsulated and greyish-white to yellow in colour. Metastasis of granulosa cell tumours is rare in occurrence in dogs. The dogs suffering from ovarian tumours are also reported to having cystic endometrial hyperplasia with blood-tinged vaginal discharge and irregular estrous cycles. Bilateral involvement ovarian tumours having reported.

**Tumour of genital tract in mare** are uncommon. Cystadenomas and cystadenocarcinomas have been described as rare tumour in horse that may spread to the adjacent peritoneal surfaces and causes ascites. Granulosa cell tumour are the most common

ovarian tumour in the mare. Granulosa cell tumour of over 30 pound may causes death of mare due to slow haemorrhage into the tumour or into the peritoneal cavity. Affected ovary may be 5 to 8 inches in diameter and the opposite ovary may be very small and atrophied possibly due to the steroid hormone secreted by the tumour. Young mare are having common occurrence of Granulosa cell tumour. Some affected mare may have an enlarged clitoris and their actions and attitudes resemble a stallion with excitement on the approach of another horse, aggressiveness, roaring like a Stallion. These action and attitude may be due to oestrogen, progesterone or even androgen elaborated by the tumour. Some Granulosa cell tumour may be solid and others contain cyst. Normal ovaries may varies in size during the year while Granulosa cell

tumour will gradually increase in size. These tumour may remove through a flank incision and conception might occur subsequently from ova released from the opposite ovary.

The prognosis for vaginal and vulvar leiomyomas is good, as they are benign, and this could be removed surgically. Other uncommon types of tumour found in the cows are melanoma and haemangioma, which occurred only on the vulva.

**How are tumours diagnosed?** By performing a biopsy test. A biopsy involves removing cell samples from a tumour. A pathologist (a medical doctor who studies diseases) examines the samples in a lab to make a diagnosis. Also by doing imaging scans, such as X-ray, CT scan, MRI or positron emission tomography (PET) scan.



Vaginal Tumor In Cows  
Source: Veterinarni Medicina, 65, 2020 (09): 401–408  
(<https://doi.org/10.17221/124/2020-VETMED>)



Right ovary measuring 35 × 20 × 25 cm exteriorised during ovariectomy in a 5-year-old German Holstein cow. Prominent enlarged functional ovarian stages can be seen

Source: Veterinarni Medicina, 65, 2020 (09): 401–408  
(<https://doi.org/10.17221/124/2020-VETMED>)



Slightly fluctuating, pedunculated, cauliflower like, non-ulcerated mass measuring 5.5 × 3.0 × 2.5 cm in the vestibule of a 3-year-old German Holstein cow.

Source: Veterinarni Medicina, 65, 2020 (09): 401–408 (<https://doi.org/10.17221/124/2020>)

### Treatment option of tumour

- ❖ **Surgery.** The goal of surgery is to remove the cancer or as much of the cancer as possible.
- ❖ **Chemotherapy.** Chemotherapy uses drugs to kill cancer cells.
- ❖ **Radiation therapy.** Radiation therapy uses high-powered energy beams, such as X-rays or protons, to kill cancer cells. Radiation treatment can come from a machine outside your body (external beam radiation), or it can be placed inside your body (brachytherapy).
- ❖ **Bone marrow transplant.** Your bone marrow is the material inside your bones that makes blood cells from blood stem cells. A bone marrow transplant, also known as a stem cell transplant, can use your own bone marrow stem cells or those from a donor.  
A bone marrow transplant allows your doctor to use higher doses of chemotherapy to treat your cancer. It may also be used to replace diseased bone marrow.
- ❖ **Immunotherapy.** Immunotherapy, also known as biological therapy, uses your body's immune system to fight cancer. Cancer can survive unchecked in your body because your immune system doesn't recognize it as an intruder. Immunotherapy can help your immune system "see" the cancer and attack it.
- ❖ **Hormone therapy.** Some types of cancer are fueled by your body's hormones. Examples include breast

cancer and prostate cancer. Removing those hormones from the body or blocking their effects may cause the cancer cells to stop growing.

- ❖ **Targeted drug therapy.** Targeted drug treatment focuses on specific abnormalities within cancer cells that allow them to survive.
- ❖ **Cryoablation.** This treatment kills cancer cells with cold. During cryoablation, a thin, wandlike needle (cryoprobe) is inserted through your skin and directly into the cancerous tumor. A gas is pumped into the cryoprobe in order to freeze the tissue. Then the tissue is allowed to thaw. The freezing and thawing process is repeated several times during the same treatment session in order to kill the cancer cells.
- ❖ **Radiofrequency ablation.** This treatment uses electrical energy to heat cancer cells, causing them to die. During radiofrequency ablation, a doctor guides a thin needle through the skin or through an incision and into the cancer tissue. High-frequency energy passes through the needle and causes the surrounding tissue to heat up, killing the nearby cells.
- ❖ **Clinical trials.** Clinical trials are studies to investigate new ways of treating cancer. Thousands of cancer clinical trials are underway.

### REFERENCES

- Paula Martz, Aycan Oezcan-Martz1, Lilli Bittner, Fanny Ebert, Wolf

- Wippermann, Adriana Woeckel, Denny Boettcher, Walter Baumgartner, Alexander Starke (2020). Case reports of genital tract tumours in cows. *Veterinari Medicina*, 65, 2020 (09): 401–40.
- G.A.L. Veiga, A. Barbosa, K.S. D'Oliveira, C. Brito, F. Kitahara, J.F. Frignani, M.A.B. Iannone, F.P. Pereira and C.P. Carramenha (2009). Retrospective Study of Tumors at the Genital Tract of Dogs. *World Small Animal Veterinary Association World Congress Proceedings*, 2009.
- Mattie J. Hendrick (1998). Histological classification of mesenchymal tumors of skin and soft tissues of domestic animals. *Armed Forces Institute of Pathology* in cooperation with the American Registry of Pathology and the World Health Organization Collaborating Centre for Worldwide Reference on Comparative Oncology, Washington, D.C.
- B. Musal, P. Ulutas, A. Aydogan (2007). Vaginal fibrosarcoma in a cow. *Irish Veterinary Journal* Volume 60 Number 7, 424-425.
- I. Yeruham, S. Perl, U. Orgad and B. Yakobson (1999). Tumours of the Vulva and Vagina in Cattle – A 10-Year Survey. *The Veterinary Journal* 1999, 158, 237–239