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MAMMARY GLAND TUMORS IN CATS – ASPECTS BETWEEN CLINICAL STAGE AND PROGNOSIS

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Abstract

Mammary tumors in cats are benign or malignant neoplastic formations characterized by abnormal and uncontrolled cellular proliferation, often influenced by hormonal factors such as estrogen and progesterone. These tumors differ in their potential for local invasion and metastatic dissemination. In September, most diagnosed cases occurred in females over 8 years of age (50.0%; 3 cases), followed by those aged 5–8 years (33.3%; 2 cases). Only one case (16.6%) was identified in the 3–5-year age group, and no cases were recorded in cats younger than 3 years. In October of the same year, of the 10 cases documented, the majority were again identified in females over 8 years of age (5 cases; 50.0%), followed by the 5–8-year age group (3 cases; 30.0%). The 3–5-year category accounted for 2 cases (20.0%). Similar to the previous month, in October, no mammary tumors were reported in cats under 3 years of age. It is noteworthy that unspayed females exhibit a significantly higher predisposition to such gynecological pathologies. Across the two months analyzed—September and October 2025—only 5 cats diagnosed with mammary tumors (45.5%) were spayed, whereas 11 (54.5%) were unspayed.

Keywords: mammary tumors, cats, breed, age distribution, spaying, hormone-dependent neoplasia

INTRODUCTION

The most frequently performed surgical intervention in female companion animals is ovariectomy (spaying). This well-established procedure, routinely applied in veterinary practice, is analogous to orchiectomy in males (Drugociu D. et al., 2015).

Research indicates that there are many reasons why owners choose to spay or neuter their pets. These reasons vary, ranging from the desire to suppress the female's reproductive cycle, to the need for urgent intervention in pathological conditions such as mammary tumors or pyometra. This surgery also plays a significant role in preventing uncontrolled mating, a common occurrence in both dogs and cats (Rosca P., 2022). Moreover, spaying prevents behavioral and physiological disturbances associated with estrus, during which females become more active and it may induce aggressive interactions among unneutered males. Ovariectomy is recommended in cases of vaginal hyperplasia, follicular cysts, repeated episodes of pseudopregnancy, and mammary hypertrophy in cats. Additionally, removal of the ovaries is also indicated in rare cases such as vaginal prolapse and nymphomania (Morris J., 2013). In both cats and dogs, the risk of developing mammary tumors is almost nonexistent if sterilization is performed prior to the first heat cycle. Furthermore, in older

dogs, spaying performed within two years of mammary carcinoma onset significantly improves life expectancy compared with that of unspayed individuals.

The study of mammary gland tumors in cats is of substantial clinical relevance, given their high incidence and their notable pathological and molecular similarities to human breast cancer.

Tumors or neoplasms are newly formed tissue masses that emerge due to abnormal cell growth. The term “tumor” derived from the Latin term “tumor,” meaning “swelling,” and it refers to any abnormal enlargement of tissue, whether neoplastic, inflammatory, hyperplastic, circulatory, etc. (Dagher E. et al., 2019).

Tumors are characterized by uncontrolled, invasive cell division, with a tendency to spread into surrounding tissues. This uncontrolled growth leads to the formation of a new type of tissue with distinct metabolic activity, affecting the overall health of animals (Hrițcu T.D. et al., 2025).

Based on morphological characteristics and clinical evolution, tumors are divided into two categories: benign and malignant. Benign tumors are composed of cells that resemble the tissue of origin and possess clear demarcation from adjacent structures. They grow slowly, and cell division occurs at a low rate (Noakes D. E. et al., 2019; Nechifor F. et al., 2025).

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In contrast, malignant tumors consist of embryonic, undifferentiated tissue, exhibit rapid growth, and lack clear borders. They often recur after surgery and can spread to other areas of the body. Their progression includes three stages: a local stage, an extension stage, and a generalization stage (Pașca A.S., 2018). The local stage is defined by the formation of the primary tumor, where rapid growth occurs only in that region. The extension stage is characterized by spread to surrounding tissues, through various pathways: lymphatic vessels, blood circulation, along nerves, or through implantation. These secondary formations are usually hard and nodular masses, firmly attached to surrounding tissues. The generalization stage is defined by the presence of metastases in distant organs. In carnivores, malignant tumors originating from ectodermal and endodermal tissues, progress more rapidly than those derived from mesodermal tissues (Sorenmo K.U. et al., 2013).

Tumor progression is influenced by a wide range of etiological factors, broadly classified into local, general, and environmental factors. Local factors include precancerous conditions, abnormal tissue growth, and persistent lesions involving continuous destruction and repair, such as ulcers, eczema, slow-healing wounds, nodular epithelial hyperplasia, and certain benign tumors such as papillomas and adenomas. General factors include heredity, species, breed, sex, and age (Viste J.R. et al., 2002). Heredity influences susceptibility to certain types of tumors, typically affecting specific tissues.

Species-related trends indicate that tumors occur in all mammals but are more frequently observed in carnivores. Clinical studies show that 75% of tumors in carnivores are malignant. In cats, lymphosarcoma is the most common neoplasm; in female dogs, the most frequent are carcinosarcoma, chondroma, adenoid chondrosarcoma, and adenocarcinoma, while in males, tumors of the perianal region are most common.

Breed plays an important role as well highly selective breeds, such as the British Shorthair and Birman exhibit reduced resistance to various diseases and a higher incidence of neoplastic disorders (Zapulli V. et al., 2019).

Sex, also influences tumor frequency, with mammary tumors being far more prevalent in females, while males more commonly develop lesions such as prostate adenoma (Joana R.J. et al., 2025). Mammary tumors are significantly more

common in females (50%) compared to males (3%).

Age has a strong impact on tumor occurrence. Malignant tumors are more frequent diagnosed in older animals, with incidence increasing around 8 years of age. In young cats, tumors are less common and are mostly benign. The number of tumors increases between 4 and 6 years of age. In cats under one year old, mammary tumors are very rare (Cassali G.D. et al., 2014; Pinello K. et al., 2022).

Environmental factors include diet, physical conditions, chemical agents, biological factors, and hormonal influences.

MATERIALS AND METHODS

In terms of how the diagnosis is made, in order to establish a diagnosis and, ultimately, a prognosis, certain steps must be followed. The first step includes taking a medical history and performing a clinical examination, which can provide many clues based on observations and palpations, yielding valuable information. The medical history includes information such as the animal's health and age, whether it has been spayed or neutered, whether it has had opportunities to mate, the number of previous births, and whether it has received hormone treatments. Next, the formations are inspected and palpated to assess their consistency, size, adherence, and local temperature. The next step, which consists of assessing the condition of the disease and making the best decisions regarding treatment, is represented by paraclinical investigations, which are essential for confirming the diagnosis. Chest radiography is a rapid and commonly used diagnostic technique in cats with mammary tumors, allowing the detection of possible metastatic lesions in the lungs.

RESULTS

A study conducted by the Faculty of Veterinary Medicine in Iași, in collaboration with four veterinary clinics in northeastern Moldova, between September and October 2025, recorded a total of 16 cats diagnosed with mammary tumors: 6 cases in September and 10 cases in October of the same year.

The statistical analysis considered several factors, including breed, age, reproductive status, and the presence of metastases in various organs.

Regarding age distribution, the highest number of cases was observed in females older than 8 years (Table 1, Figure 1).

Table 1

Frequency of breast tumors in female cats in relation to age between

September and October 2025

Age	Cases in September		Cases in October	
	No.	%	No.	%
<3 years	0	0	0	0
3-5 years	1	16,6	2	20,0
5-8 years	2	33,3	3	30,0
>8 years	3	50,0	5	50,0
Total	6	100	10	100

The table above shows that, in September, most cases were recorded in females over 8 years of age (50.0%), totaling 3 cases. This was followed by the 5–8-year age group (33.3%), with 2 cases, while only 1 case (16.6%) was recorded in the 3–5-year age group. No cases were identified in cats younger than 3 years (Figure 1).

Regarding October of the same study year, the data indicate that, of the 10 cases diagnosed that month, most occurred in females older than 8 years (5 cases, or 50.0%), followed by the 5–8-year age group (3 cases, or 30.0%). The 3–5-year age group accounted for 2 cases (20.0%). As in the previous month, no mammary tumors were recorded in cats under 3 years of age.

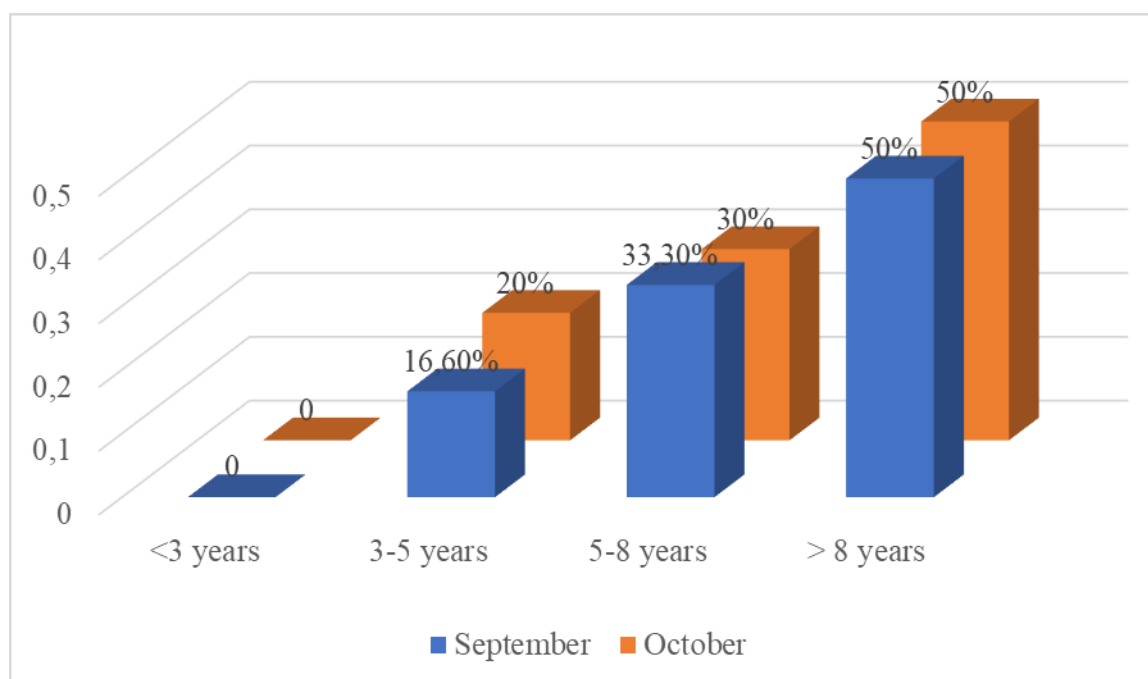


Figure 1 - Incidence of mammary tumors by age in cats

Analyzing the data presented in Table 2 and Figure 2, it is evident that most unspayed cats are more prone to developing these gynecological conditions. Between the two months studied, September and October 2025, only 5 cats (45.5%)

diagnosed with mammary tumors had been spayed, whereas 11 cats (54.5%) were unspayed. In conclusion, these findings highlight the crucial role of ovarian hormones in the onset and progression of mammary tumors in female cats.

Table 2

Incidence of mammary tumors according to the reproductive status of females during September-October 2025

Total females with mammary tumors	Reproductive status of females			
	Castrated		Not castrated	
	No.	%	No.	%
16	5	45,5	11	54,5

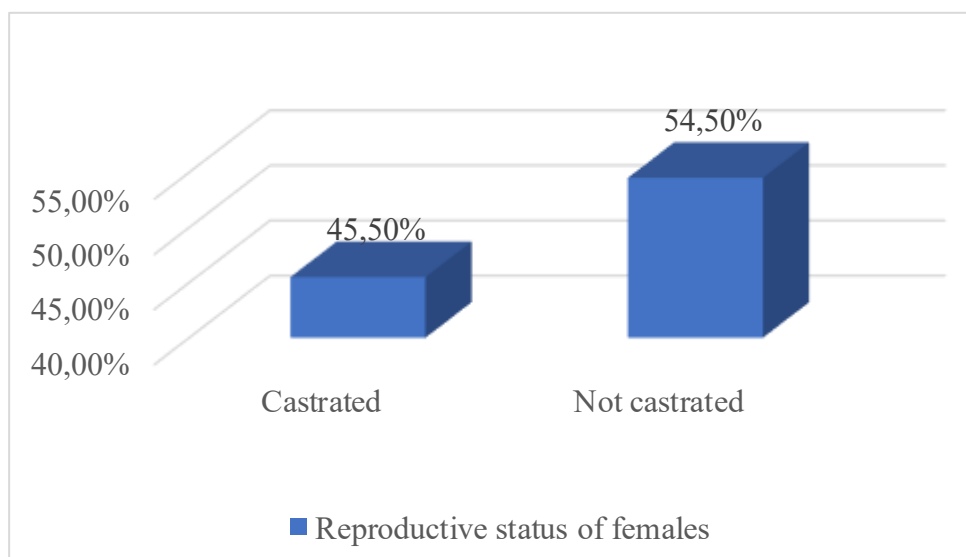


Figure 2-Incidence of mammary tumors according to the reproductive status of females during September-October 2025

Racial predisposition is a criterion that helps determine the frequency of mammary tumors in different cat breeds. According to the data, the highest incidence was recorded in Birman cats, with 6 cases (37.5%), followed by Siamese cats,

with 3 cases (18.8%). Russian Blue and British Shorthair cats each accounted for 2 cases (12.5%). The lowest proportions, with only one case each (6.2%), were recorded in Persian and Sphynx breeds (Table 3, Figure 3).

Table 3

Frequency of mammary tumors in female dogs by breed during September-October 2025

Breed	Cases diagnosed with breast tumors	
	No.	%
Birman	6	37,5
Siamese	3	18,8
Russian Blue	2	12,6
British Shorthair	2	12,6
Persian	1	6,2
Sphynx	1	6,2
European Shorthair	1	6,2
Total	16	100

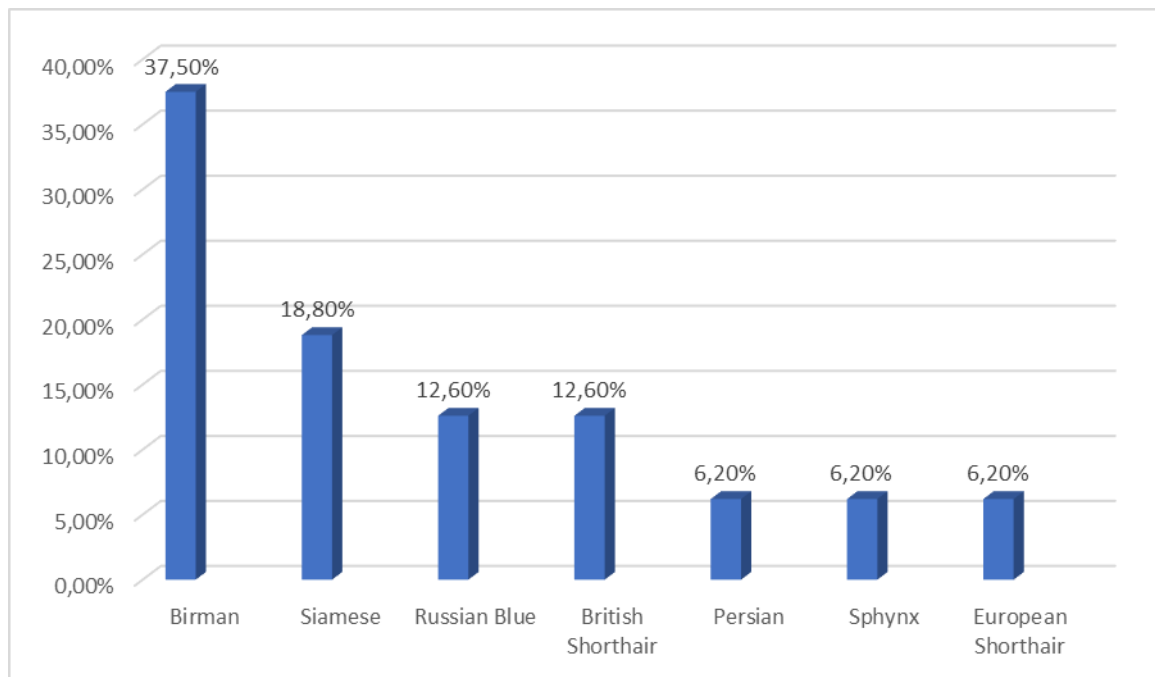


Figure 3 - Frequency of mammary tumors in female cats by breed during September-October 2025

In cats, postoperative care following mammary gland tumor removal aims to prevent infections and local complications, control inflammation, support wound healing after gynecological surgery, and reduce the risk of cancer spread and recurrence.

DISCUSSION

In all animal species, mammary tumors are influenced by hormonal factors, and each reproductive cycle increases the likelihood of their development (Cassali G.D. et al., 2014). Due to this essential hormonal involvement, numerous studies have analyzed the effects of endogenous and exogenous hormones, showing that in more than half of the cases, tumor growth accelerates when the female is in estrus. Early exposure to hormones is considered a major risk factor for the development of mammary tumors in cats. Research has demonstrated that performing an ovariectomy before the first heat cycle reduces the risk of mammary tumors to as low as 0.05%, compared with sterilization performed between the first and second cycles or after the second cycle, where the risk increases to between 8% and 26%. Furthermore, exposure to high levels of external hormones, including both estrogen and progesterone, has been strongly associated with an increased incidence of mammary gland tumors (Pires I. et al., 2008).

Progesterone stimulates the development of endometrial glands and contributes to the formation of mammary tissue. Together with estrogen, it plays a crucial role in the initiation and

progression of mammary tumors due to its growth-stimulating effects (Zappuli V. et al., 2019). When acting in combination with prolactin, progesterone increases the number of estrogen receptors, thereby enhancing the proliferative action of estrogen.

Despite the epidemiological relevance of mammary tumors in cats, records related to their reproductive health are often incomplete. Essential information such as spay status, previous reproductive disorders, and the use of certain medications—factors frequently associated with tumor development—is often missing from clinical documentation (Joana R.J. et al., 2025).

CONCLUSIONS

Postoperative treatment of mammary tumors in female dogs requires a comprehensive approach that combines surgical care, medication, and ongoing monitoring. Adequate pain management is essential, and analgesics, anti-inflammatory drugs, and, when necessary, antibiotics are administered to support healing and prevent complications. Proper wound care—keeping the incision clean and preventing self-trauma—is crucial during recovery.

In cases with malignant histopathological findings, additional therapies such as chemotherapy may be recommended to reduce the risk of recurrence or metastasis. Regular follow-up examinations, including physical assessments and imaging, help detect any signs of tumor regrowth at an early stage. Effective collaboration between the

veterinarian and the owner ensures optimal recovery and improves long-term outcomes.

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