Mammary Tumors in Rats

Introduction/Definition

Mammary fibroadenomas are the most common rat tumors and represent more than half of the cases of masses detected under the skin. These tumors can appear along the neck, shoulders, belly, and flank because rats have significant mammary tissue extending from the neck to the inguinal region. Both male and female rats can develop these masses, although they are more common in females. Most rat mammary tumors are benign (non-cancerous) masses called fibroadenomas. However, up to 25% of subcutaneous (under the skin) rat masses are cancerous, thus all masses should be analyzed by a veterinary pathologist once removed.

QUICK FACTS

The best way to prevent mammary tumors is to have females spayed at a young age, ideally between 4 and 7 months of age.

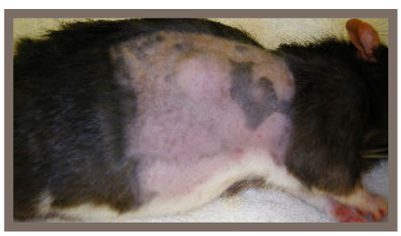
Mammary masses typically occur in middle-aged to older intact female rats.

Subsequent tumors can develop as soon as a few months after surgery.

Other types of benign tumors include mammary adenomas and myoepitheliomas, sebaceous duct cystadenomas, lipomas and peripheral nerve sheath tumors. The most common types of malignant non-mammary gland tumors that could be present include fibrosarcoma, spindle-cell sarcoma and leiomyosarcoma. Non-neoplastic swellings could be secondary to mammary gland hyperplasia, fibrosis, mastitis, a cyst or abscess.
Even though fibroadenomas are typically non-cancerous, they tend to become very large, ulcerated, and painful. In addition, subsequent fibroadenomas can develop after surgical removal, because of persistent hormonal triggers. On average, another mass can develop within 4 months after surgery.

Clinical Signs

Soft or firm masses can appear under the skin/hair on various locations on the body. These masses can grow very quickly, sometimes doubling in size in as little as 72 hours. Over time, masses can become ulcerated and secondarily infected.



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Diagnostics

Fine needle aspiration, or FNA, of the growth can be performed when the growth is found to analyze the cells under the microscope. A study suggested this test is rarely accurate because the cytologic results were inconclusive for several samples, and resulted in an incorrect microscopic diagnosis for two samples. Only two of nine cytologic results in the study were correct. However, anecdotally, this test has been found to be helpful to rule out other types of masses such as an abscess.

Once removed, histopathology of the removed tumor should be performed by a board-certified pathologist. This test is much more accurate as it is performed on a section of the tumor as a whole versus a small sample of cells as in FNA. This test also helps determine if the entire mass was removed and if an additional surgery or other treatment is indicated based on the findings.

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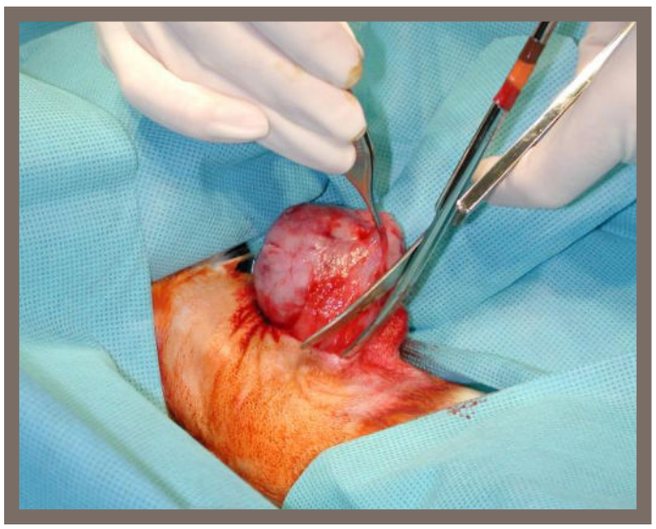
Treatment(s)

The only reliable treatment is surgical removal of the mass by a qualified exotic companion mammal veterinarian. This surgery should be performed as soon as possible after mass detection as larger masses are more difficult to remove. Your veterinarian will use appropriate pain management before, during, and after surgery and other measures appropriate for your pet to minimize post-operative complications.



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Since mammary fibroadenomas of companion rats contain more prolactin receptors and less androgen receptors than the surrounding mammary tissue, it has been suggested that long-term prolactin-inhibiting drugs such as cabergoline may decrease the risk of subsequent masses. There are no evidence-based studies that confirm cabergoline is effective.

Risk Factors

Both male and female rats are at risk for development of mammary tumors; however, they are more common in females. Older, intact (non-spayed) female rats are the highest risk group.

Prevention

A study evaluating the effect of contraceptive implants (deslorelin) has not shown any preventive effect at the time of tumor removal. The best way to prevent mammary tumors in female rats is to have them spayed at a young age, ideally between 4 and 7 months. Typically, the younger the age of the rat at time of the spay procedure, the less the risk of developing mammary tumors will be. In one study, spaying female rats between 5 and 7 months of age decreased the rate of tumors from 73.8 to 5.3%. You should discuss the benefits and risks of this procedure with your veterinarian.

References

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