



RABBIT UTERINE ADENOCARCINOMA

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BACKGROUND

Rabbits receive as much attention and concern from their families as other pets! There are approximately 4.8 million pet rabbits in modern American homes. Veterinarians need to educate the public about this common, preventable, life-threatening disease.

Adenocarcinoma of the uterine endometrium is the most common tumor in female rabbits. Many intact female rabbits are affected before two years of age, and up to 80% will be affected by age seven. The incidence is equally high regardless of whether the intact doe is reproductively active or not. The most susceptible breeds include Tan, French silver, Havana, and Dutch, but any breed can be affected.

Uterine adenocarcinomas grow slowly, but are often multicentric and involve both horns of the uterus. Multiple nodular thickenings may protrude into the uterine lumen. Histologically, these thickenings are composed of acinar and tubular structures supported by a vascular myxoid stroma. Local metastases to the peritoneum, liver, and abdominal organs are common; hematogenous spread to lung, CNS, skin, and bones can occur.

CLINICAL SIGNS

Clients may present their rabbit because of red or brown urine, vaginal discharge, increased respiratory effort, weight loss, skin masses, mammary masses, weakness, and hind limb paresis or paralysis. Decreased activity, depression, and anorexia are also common signs.

Reproductive complications are often the first indicators of uterine adenocarcinoma in breeding rabbits. Obstetrical problems are rare in healthy rabbits, so dystocia, retention of fetuses in utero, early to mid-term abortion, and fetal resorption are important indicators of disease. Reduced fertility, stillborn litters, reduced litter size, abdominal pregnancy, and pregnancy toxemia can also occur.

In addition to the historical problems and presenting complaints, physical examination findings can include poor body condition, poorly groomed coat, perineal soiling, urine scald, palpable abdominal masses, increased respiratory rate, auscultable respiratory noise, increased expiratory effort, mammary gland masses, skin masses, pale mucous membranes, dull response to stimuli, and neurological deficits including hind limb paralysis. Voided urine may contain blood clots because hemorrhage from the reproductive tract will enter the vaginal vestibule and mix with pooled urine.

DIAGNOSIS

History, presenting complaint, and physical examination findings provide the basis for diagnostic testing. Hematological abnormalities might include regenerative anemia or heterophilia (neutrophilia). Hematuria must be differentiated from porphyria (porphyrin-pigmented urine) by urine dipstick and identification of RBCs via microscopy. Abdominal and thoracic masses may be identified with radiography and ultrasonography. Ultrasonographic findings may include hypoechoic masses in one or both uterine horns, and radiographic findings can include soft tissue density masses that may be mineralized and can displace the surrounding viscera. Hypertrophic osteopathy has been associated with metastatic lung masses. Whole body imaging with computed tomography (CT) and/or magnetic resonance imaging (MRI) is available and can be used to identify metastases. Free peritoneal fluid can be

identified with imaging and collected via abdominocentesis. Peritoneal fluid abnormalities are not unique to uterine adenocarcinoma, but include increased tenacity, presence of red and white blood cells, and presence of epithelial cells. Histopathology of needle or incisional tissue biopsy (ultrasound-guided or via keyhole) can confirm the diagnosis before surgery, though complete ovariohysterectomy is generally used as both a diagnostic and therapeutic tool. A complete exploration of the peritoneal cavity is necessary to help determine whether grossly visible local metastasis has occurred.

TREATMENT

Complete ovariohysterectomy is the treatment of choice for non-metastatic uterine adenocarcinoma. Rabbits with metabolic compromise are, however, poor candidates for general anesthesia and abdominal surgery. Pre-operative diagnostic evaluation should minimally include whole-body radiographs, complete blood count, urinalysis, blood gases, and blood chemistry panel. Anesthetic agents should be selected to provide optimum safety and maximum analgesia. Intravenous fluids and endotracheal intubation are essential. The anesthetist is best prepared to manage anesthesia if end-tidal CO₂, SpO₂, blood pressure, respiratory rate, heart rate, core body temperature, and electrocardiographic tracings are monitored. Core body temperature must be maintained through the use of a combination of heat sources that may include warm water circulating blankets, heat lamps, and warm forced-air blankets (e.g., Bair Hugger, Arizant Healthcare, Inc., Eden Prairie, MN).

Cancer chemotherapy can be used in cases of metastasis in addition to ovariohysterectomy. There are no reports of outcomes following chemotherapy for uterine adenocarcinoma in rabbits, but much safety data is available. Either single agent doxorubicin or a combination of doxorubicin and carboplatin should be considered, and health parameters should be closely monitored for undesirable side effects.

PROGNOSIS

The prognosis is good for uncomplicated, local, uterine adenocarcinoma that is treated by surgical removal of tumor tissue contained within the uterus. Once metastasis has occurred, the prognosis is grave and few rabbits live longer than a few months.

PREVENTION

Uterine adenocarcinoma is easily prevented in companion rabbits by early ovariohysterectomy. The best age to spay a rabbit is approximately four to nine months because they are immunologically mature and there is usually little fat deposited within the broad ligament. General anesthesia performed by properly trained veterinarians and nurses is safe in healthy rabbits, with an incidence of complications that is similar to dogs and cats. Early ovariohysterectomy also eliminates unwanted litters, and reduces urine spraying and the incidence of cystic mammary hyperplasia.

KEY POINTS

- Uterine adenocarcinoma affects up to 80% of female rabbits over the age of 3 years
- Complications of uterine adenocarcinoma increase the risk of anesthetic death
- Prevention is simple and safe: spay companion rabbits between 4 and 9 months of age



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