

## Uterine Adenocarcinoma in a Domestic Rabbit

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**Abstract:** The uterine adenocarcinoma is a tumor of rabbits commonly diagnosed at necropsy which seldom metastasises and rarely presents as a clinical entity in life. A three-year-old intact female rabbit was referred to the Islamic Azad university clinic in Tehran for ovarian hysterectomy. On exploratory laparotomy the uterus was observed to be much enlarged. All other organs were normal in appearance. The treatment of this animal involved ovarian hysterectomy. Samples of tumor were sent for histopathological examination. The conclusive diagnosis was that of a uterine adenocarcinoma.

**Key words:** Uterine • Adenocarcinoma • Rabbit

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### INTRODUCTION

Uterine cancer is the most studied form and most common of cancers found in rabbits. Many studies have found incidence rates of 1.3%-2.6%. The Biology of Laboratory Rabbits report studies finding numbers such as 16 rabbits with cancer. Uterine adenocarcinoma is the most commonly spontaneous neoplasm occurring in European rabbit, *Oryctolagus cuniculus* [1-4].

Uterine adenocarcinoma arises from endometrial glands and is the most common spontaneous neoplasm in Rabbits. The incidence of this neoplasm increases to 80% of animals 5-6 years and older in *Oryctolagus cuniculus*. The etiology of the neoplasm is unknown, however some reports implicate estrogen as a related factor [5].

Uterine adenocarcinoma was not found in the Belgian or Rex breeds but occurred in other breeds like as Tan, Dutch and French Silver [1,2]. leiomyoma and leiomyosarcoma of uterine endometrium is another reported tumor of genital system. Hemangioma is the only reported ovarian tumor in rabbits. Although ovarian tumors are almost common in companion animals such as dogs but luteomea is a rare entity in veterinary medicine [6].

This study, reported a case of Uterine Adenocarcinoma tumor in rabbit.

**Case History:** A three-year-old intact female rabbit was referred to the Islamic Azad university clinic in Tehran for ovarian hysterectomy. The animal showed the signs of depression and anorexia. The rabbit has a normal body temperature of 38.4°C. No other abnormalities were detected. The surgery of this animal involved ovarian hysterectomy. On exploratory laparotomy the uterus was observed to be so enlarged; the horns were 10 cm in diameter and fluid-filled. The uterine arteries were abnormally large and a solid, soft-tissue tumor was present on the left ovary. All other organs were normal in appearance. The treatment of this animal involved ovarian hysterectomy. General anesthesia was induced by intramuscular Diazepam (1mg/kg) premedication and intravenous Ketamine hydrochloride (35mg/kg) and Xylazine (5mg/kg). The rabbit was positioned in dorsal recumbency and a ventral midline incision was made cranial to the pelvic brim. The uterus was exteriorized. The ovarian arteries were identified and ligated using catgut ligatures. The uterine arteries were ligated with double catgut ligatures. The uterus was excised at the cervix. The cervical stump was over sewn using polyglactin 910 sutures. Before closure, the abdominal cavity was irrigated with normal saline solution to reduce the risk of peritonitis. Abdominal closure was effected using Vicryl sutures in the linea alba and subcutaneous fat; nylon simple interrupted sutures were used to close



Fig. 1: Showing adenocarcinoma on the uterus

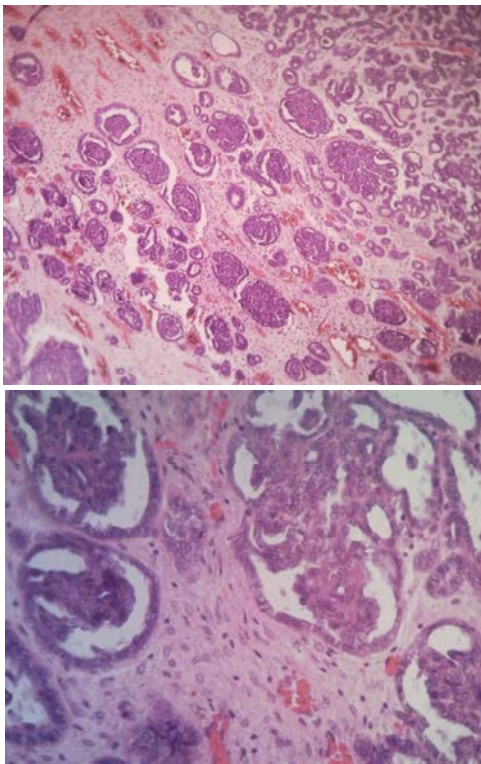


Fig. 2: Section of the adenocarcinoma in the uterus rabbit (H&E)

the skin. Antibiotics (penicillin G procaine 40000 IU/kg IM, bid), dexamethasone (0.6 mg/kg, IM), vitamin B.complex (0.2 mg/kg, IM) and analgesic such as Tramadol hydrochloride (5 mg/kg, IM, bid) were administered for 3 post-operative days. Two weeks postoperatively, the skin sutures were removed and the animal made a full recovery. The uterus was opened once the surgery was completed to investigate its contents. One large tumor was present (Figure 1).

Samples of tumor were sent for histopathological examination. The samples revealed multiple lobules of neoplastic epithelial cells forming irregular acini, some of

which contained mucin. Some tumor cells had invaded the muscle layers but not the serosa so the prognosis was good (transcoelomic spread was therefore unlikely). The conclusive diagnosis was that of a uterine adenocarcinoma (Figure 2).

## DISCUSSION

With increasing the age of female rabbits the endometrium undergoes progressive changes, a decrease in cellularity and an increase in collagen content. These changes are associated with the development of uterine cancer [1]. Adenocarcinoma of the uterus is a slowly developing tumor. Local invasion of the myometrium occurs early and may extent through the uterine wall to adjacent structures in peritoneal cavity; hematogenous metastasis to the lung, liver and sometimes brain and bones may occur within 1 to 2 years [1, 2]. Greene [7] also found that reproductive problems occur in the does prior to tumor detection, the author reports the reproductive disturbances include: diminished fertility, reduced litter sizes and many dead young, retention of litters, abortion, or resorption. In one fourth of the uterine cancer cases cystic breast changes were also observed. He also found that the incidence vary in relation to age, breed and other constitutional factors. "No instance of the tumor occurred in the Belgian or Rex breeds and the arrangement of breeds in order of increasing incidence stands as follows: Polish, Himalayan, Sable, Beveren, Chinchilla, English, Marten, Dutch, Havana, French Silver and Tan [7]. The incidence of uterine adenocarcinoma in does 2-3 years of age was around 4% [3]. Greene [7] also found that there was a link between pregnancy toxemia and eventual development of uterine cancer. Apparently tissue changes and blood chemical alterations were the same in fatal cases of pregnancy toxemia as "mild" cases. All animals experiencing toxemia later developed uterine cancer [8, 9]. This is the link between endometrial hyperplasia and uterine cancer; it always preceded the development of a tumor in the studies. Greene [7] showed that liver function is affected by pregnancy toxemia and can last up to a year. During this time the inability of the liver to suppress estrogen could ultimately result in tumors. Adenomyosis and endometriosis are two important lesions only in primates. Adenomyosis is the presence of nests of endometrium within the myometrium. However, endometriosis is the presence of endometrial glands or stroma in locations outside the uterus, such as the ovary, the mesometrium, the peritoneum and, peritoneal surgical scars [8, 9]. The lesion, endometriosis,

leaves viable tissue which is subjected to the effect of various hormones and has no outlet for its secretions and may result in accumulation of secretions, possibly toxemia [10].

The distribution pattern of neoplastic disease in companion animals could be similar with lagomorphs but there are only a few reports in the literature regarding rabbit's tumors. Uterine adenocarcinoma is the most common tumor of intact female rabbits, with incidences of 50-80% in certain breeds over 4 years old. Ageing changes and endometrial hyperplasia often precede adenocarcinoma [1, 2, 11]. The conclusive diagnosis was that of a uterine adenocarcinoma.

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