Note

Mammary Adenocarcinoma in a Young Female Hypercholesterolemic Rat

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Pathological examination of a 12-week-old female rat with hypercholesterolemia revealed mammary adenocarcinoma. Grossly, one grayish-white nodule was found in the hypoderm near the right posterior mammary gland. Histologically, the nodule was composed of variable-sized epithelial cells which lined the tubules and ducts in one to several layers, accompanied by proliferation of connective tissue in the stroma. Mitotic figures, necrosis and hemorrhage appeared frequently throughout the lesion. The tumor cells had invaded the surrounding muscular tissue. — KEY WORDS: hypercholesterolemic rat, mammary adenocarcinoma

Mammary adenocarcinoma has been frequently reported in aging rats, but is rare in young rats [1, 2, 3, 4]. This paper describes morphological changes in a mammary adenocarcinoma found in a young rat.

The tumor was found in a female 12-week-old hypercholesterolemic rat provided by the Biological Research Laboratories, Central Research Division, Takeda Chemical Industries, Ltd., Osaka, Japan. When the rat was 10 weeks old, the nodule was found in the right inguinal region, and increased in size with age. Although this animal was mated, pregnancy was not confirmed. The animal revealed hypercholesterolemia from 8 weeks of age.

At necropsy, the nodule appeared in the hypoderm near the right posterior mammary gland. It measured 20 x 20 x 30 mm, and was grayish-white in color. At the cut surface, it was grayish-white and showed lobular configurations. Several abnormal implantation sites (Ø 2 mm) were found in the uterus. Histologically, the tumor was composed of variable-sized epithelial cells, which lined the tubules and ducts in one to several layers (Fig. 1). The tumor cells were round or oval, with variable cell contours, and had sparse, slightly eosinophilic cytoplasm. Their nuclei with dispersed chromatin had 1 or 2 nucleoli, and were round or oval in shape. Occasionally, the stroma showed proliferation of connective tissue, resulting in papilliform projections in the ducts and tubules. Mitotic figures, necrosis and hemorrhage appeared frequently throughout the lesion. Also, the tumor cells had invaded the muscular tissue (Fig. 2).

The tumor was diagnosed as mammary adenocarcinoma on the basis of its morphology, but may have been papillary adenocarcinoma according to the WHO classification. It is of considerable interest that this tumor was already present in a 12-week-old rat, since mammary adenocarcinoma is said to occur frequently in animals aged over one year [2]. Although the rat examined in the present study showed hypercholesterolemia and several abnormal implantation sites in the uterus, we were unable to clarify the relationship between these and mammary adenocarcinoma.

References

若齢高コレステロール症雌ラットにみられた乳腺癌の1例

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12週齢の高コレステロール症ラット雌に乳腺癌が認められた。肉眼的に右後部乳腺部付近の皮下に灰白色腫瘍がみられた。組織学的に腫瘍は、しばしば核分裂像を示す一層から数層の異形上皮細胞からなる腺管様構造と、増殖した結合組織から形成されていた。腫瘍内には、壊死および出血がみられ、腫瘍細胞の周囲筋組織への浸潤も認められた。

Explanation of Figures

Fig. 1. The tumor consists of variable sized epithelial cells, which line the tubules and ducts HE ×98

Fig. 2. The tumor invades the adjacent mucular tissue HE ×195