

Cystic Papillary Adenocarcinoma in Mammary Gland of a Wistar Rat – A Case Report

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ABSTRACT

A case of cystic papillary adenocarcinoma in an aged female Wistar rat on the posterior mammary glands is reported. A firm spherical mass approximately 2 cm in diameter was observed in the posterior pair of mammary glands, covered with skin. The rat was euthanized and a detailed necropsy examination was carried out. Representative tissue samples of the mass were collected in formalin, and histopathological examination revealed cystic papillary adenocarcinoma.

Keywords: Wistar rat, Mammary gland, Papillary cystic adenocarcinoma

INTRODUCTION

Adenomas and adenocarcinomas are not commonly reported in aged Wistar rats. In female rats, pituitary adenomas were frequently reported, in addition to secretory mammary cysts and hyperplasia (Goodman *et al.*, 1979). Adenocarcinomas are classified as solid, papillary, cystic, comedo, follicular, tubular, and trabecular based on the histological appearance of the glandular tissue formed by the tumor cells, or as mucinous and colloid based on the secretions of the tumor cells (Okuyucu *et al.*, 2022). Although adenocarcinomas with a tubular pattern tend to appear in the mammary

glands, in older animals, ductal and papillary adenocarcinomas are found more frequently in both the thoracic and abdominal mammary glands in young animals (Russo and Russo, 1996). Blood and lymph vessels are the two pathways through which mammary tumors could metastasise. A case of cystic papillary mammary adenocarcinoma in an aged female Wistar rat is presented in this paper.

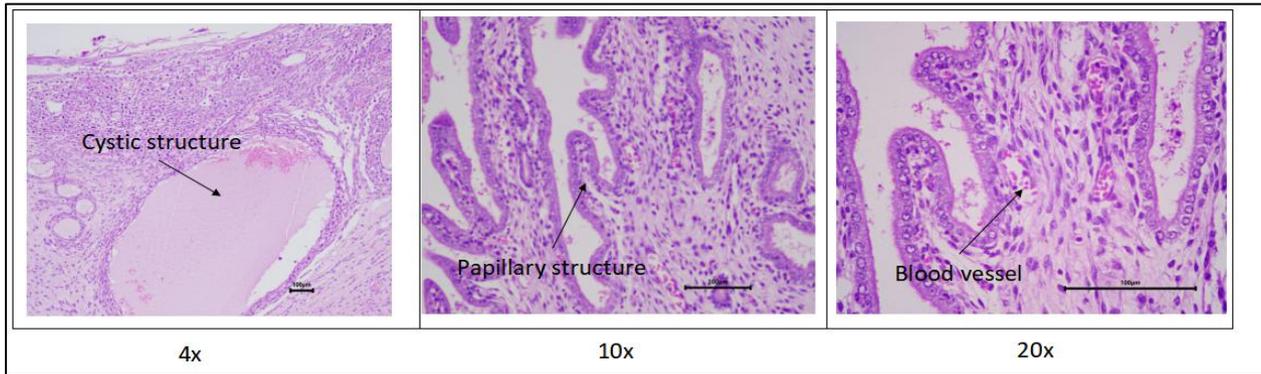
CASE HISTORY AND OBSERVATION

An abnormally enlarged, movable, firm, and spherical mass measuring 2 cm in diameter on both sides of the posterior lateral region of an aged female Wistar rat was observed in a breeding colony maintained at the Mass Biotech facility at Chengalpet, Tamil Nadu. The female rat was around one year old and weighed 230 g, and clinically showed abnormal behavioural changes in the colony. The rat was euthanized with excess inhalation of isoflurane, necropsy was conducted, and gross lesions were recorded. Representative tissue samples of vital organs and tumor mass were collected in 10% formalin. The tissues were then processed for histopathological examination and stained with H and E staining. Grossly, the mass was bilateral, firm, grey, and round, located on the posterolateral region, anterior to the femoral bone, measuring about 2 cm in diameter.

Figure 1: Female Wistar Rat with a Firm, Round, Grey Mass in the Subcutis



Figure 2: Histological Features of the Mass



Histologically, the tumor cells were arranged in single or multilayered glands, with intraluminal papillary projections of proliferating glandular epithelial cells. A few glands appeared cystic, lined with single/two layers of cuboidal epithelial cells and with pink homogenous material in the lumen. The tumor cells showed marked cellular and nuclear atypia, the tumor stroma consisted of moderate fibrous tissue (Figure 2). The histological findings were similar to the earlier reports of cystic papillary adenocarcinoma in rodents (Pal *et al.*, 2010; Sudharsanan *et al.*, 2017).

DISCUSSION

The intrinsic and extrinsic factors that cause spontaneous mammary tumours in laboratory rats may include age, obesity, hormonal imbalance, and genetic mutation (Bode *et al.*, 1985; Nagaoka *et al.*, 1990; Hosokawa *et al.*, 2000). The mammary cystic papillary adenocarcinoma in a female Wistar rat is rare, which may be pertinent to preclinical biomedical research under experimental conditions and its health monitoring.

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