Aortic Body Tumor in a Duck

R. L. SAH, L. N. ACHARIJOY and G. C. MOHANTY

Division of Pathology, Indian Veterinary Research Institute, Izatnagar, U.P.

Abstract. A chemodectoma of the aortic body was found at the base of heart of a Brahminy duck (*Tadorna ferruginea*). It incorporated aorta and pulmonary artery at their emergence, part of vagus nerve, sympathetic ganglion, and thyroid gland. The tumor cells had infiltrated the local lymphatics only.

Tumors of aortic and carotid bodies are rare and have been reported mainly in man [4] and dog [1, 3, 6], although other animals are occasionally affected [4, 7–9]. Tumors that arise from chemoreceptive cells in these bodies are commonly referred to as chemodectomas. They are in general related to the common group of non-chromaffin paragangliomas [5].

An aortic body tumor in a Brahminy duck, a migratory bird of northern India, Nepal, and Pakistan is described. Such a tumor or related tumors has not been reported in any avian species.

Case Report

A 2-year-old male Brahminy duck in a zoo died without any specific clinical signs. It had a globular, circumscribed, 2-cm fleshy mass that was firmly adherent to the base of the heart between the aorta and pulmonary artery and enveloped these vessels at their emergence and compressed the atria. The pericardium covered the surface of the tumor, thus forming its capsule. The cut surface was pink and lobulated. A circumscribed red-brown structure about 4 mm thick was embedded in the anterior border of the tumor. The aorta and pulmonary artery were free from gross lesions. There was copious pericardial effusion. The liver, spleen, kidneys, and lungs were intensely congested. The liver was fibrosed and covered with a yellow fibrinous coating. The serous membranes were covered with fine, white crystalline urate deposits.
Fig. 1. Tumor cells arranged in sheets. Peritheliomatous arrangement and trabeculae are also seen. HE.

Fig. 2. Tumor cells arranged in the form of pallisades around capillaries. HE.

Fig. 3. Higher magnification showing some bizarre cells with vacuolated cytoplasm and large nucleus and nucleolus. HE.
Thin pieces from various tissues including several from the tumor were fixed in 10% formol-saline and embedded in paraffin. Sections were cut at 4–6 μm and stained with hematoxylin and eosin. Some were also stained with Masson’s trichrome, Foot’s silver impregnation method for reticulum, periodic acid-Schiff (PAS), van Gieson’s, and Gomori’s chromaffin.

The tumor was composed largely of cells in broad sheets or nests (fig. 1). Thin branching trabeculae extending from the capsule divided it into lobules of irregular size. The cell nests were separated by a loose and well vascularized fibrous stroma. In some places the cells were oriented around thin-walled capillaries forming peritheliomatous or perivascular palisades (fig. 2), whereas in others they assumed an alveolar or low papillomatous pattern.

The cells in the nests and around the capillaries were round or ovoid, but were large and polyhedral when in broad sheets. The cytoplasm of these cells was abundant, faintly acidophilic and granular or finely vacuolated. Nuclei were large, spherical, and sometimes hyperchromatic, often with a single nucleolus. Cellular boundaries were indistinct. Cells with a large, irregularly-shaped nucleus, often with two nucleoli, were scattered among the tumor cells (fig. 3). Part of the vagus nerve, sympathetic ganglion, aorta and pulmonary artery were incorporated in the mass. The red-brown nodule in the anterior border was thyroid that contained normal acini with colloid. A lymph vessel was filled by a tumor embolus. The neoplastic cells had no tendency to invade the aorta and pulmonary artery or the capsule of the thyroid gland. Occlusion of the blood vessels by organized thrombi was evident in the lung; there were no tumor emboli.

Argyrophilic reticular fibres were sparsely distributed in the connective-tissue stroma, but were abundant around capillaries. PAS-positive material within nests of tumor cells was not detected. Neoplastic cells in a section treated with Gomori’s chromaffin stain did not have any intracytoplasmic granules. Collagenous tissue was demonstrated by Masson’s trichrome stain.

**Discussion**

The general structure of the tumor almost corresponds to that of tumors arising from chemoreceptor organs, namely the cardioaortic and carotid bodies in man and dogs [2, 4].

The location of a cardioaortic body is considered to be of limited diagnostic value since such a body could easily be confused with a tumor of ectopic thyroid and parathyroid in the same region [6]. It has been suggested, however [5], that the anatomic situation is important in diagnosing and substantiating the structure of the tumor.

In the present case it appears that the tumor arose from the chemoreceptor cells of the aortic body. Serous exudation into the pericardial sac and peritoneal cavity, and chronic venous congestion of visceral organs, were apparently caused by compression of the atria.

The urate deposition on serous membranes was a concurrent finding, and its presence appears to have no relation to the tumor.
References


Request reprints from: R. L. Sah, Division of Pathology, Indian Veterinary Research Institute, Isatnagar, U.P. (India)