

BRIEF COMMUNICATIONS

Primary Pulmonary Osteosarcoma in a Dog with Associated Hypertrophic Osteopathy

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Primary pulmonary sarcomas are uncommon in animals and man [4, 6, 10] and primary osteosarcoma in the lung of man is particularly rare [5, 8, 9]. In the dog only five probable cases of primary pulmonary osteosarcoma have been reported [2]; other extraskkeletal osteosarcomas occur occasionally [1, 7]. Primary osteosarcomas of the upper airway also have been reported [3]. Hypertrophic osteopathy occasionally is found in the dog and is most frequently associated with primary or metastatic lung neoplasia, notably metastatic osteosarcoma [2].

A 4-year-old entire male Borzoi had slight pyrexia, bilateral swelling of the lower limbs and was reluctant to move. The affected parts of the limbs were warm to the touch but not painful to pressure, and there were no specific clinical signs referable to the chest. Radiographic examination showed typical changes of hypertrophic osteopathy in all limbs, as well as two radiopaque masses in the right thorax. After clinical examination the dog was killed and necropsied immediately.

The changes of hypertrophic osteopathy extended distally from the middle of the humeri and tibiae. The affected bones had an enclosing layer of proliferating bone and there was marked fibrovascular thickening of the overlying hypodermis. A single large nodular tumor 5 centimeters in diameter was in the right lung, close to the ventral tip of the apical lobe, and a similar lesion 3 centimeters in diameter was in the right tracheobronchial lymph node. These tumors were hard and bony. The entire disarticulated skeleton was cleared of musculature, skin and viscera and again radiographed. All bones were then sawed into narrow sections but no other primary neoplasms were found.

Microscopical examination of various tissues, which had been decalcified if necessary, confirmed the diagnosis of hypertrophic osteopathy and pulmonary osteosarcoma with metastasis to the tracheobronchial lymph node. Neoplastic tissue was not discovered in any other organ or site. The neoplasms were unencapsulated and caused compression of the adjacent tissues. The lung tumor did not appear to have arisen from any bronchial or bronchiolar structures, and there was no continuity with the pleural tissues. Both neoplasms were formed of abundant, often calcified, osteoid trabeculae (fig. 1) with moderate cellularity and vascularity. In the periphery of the tumors, particularly, crowded palisades of neoplastic cells were closely apposed to irregular osteoid trabeculae (fig. 2); in the more sclerotic deeper areas, neoplastic cells were scattered along the spaces between the trabeculae. The malignant osteoblasts were moderately pleomorphic and typically sarcomatous with poorly defined cytoplasm and large, ovoid, often vesicular nuclei. Nucleoli were usually single and of moderate size and the chromatin was coarsely clumped. Mitotic figures were common in the more cellular areas and occasional multinucleate giant cells were present. There were no cartilaginous or epithelial cells in these tumors and it was presumed that this osteosarcoma originated from pluripotential cells of the pulmonary or bronchial connective tissues. Diffuse atrophy of the thyroid and testicular degeneration with cessation of spermatogenesis also were found.

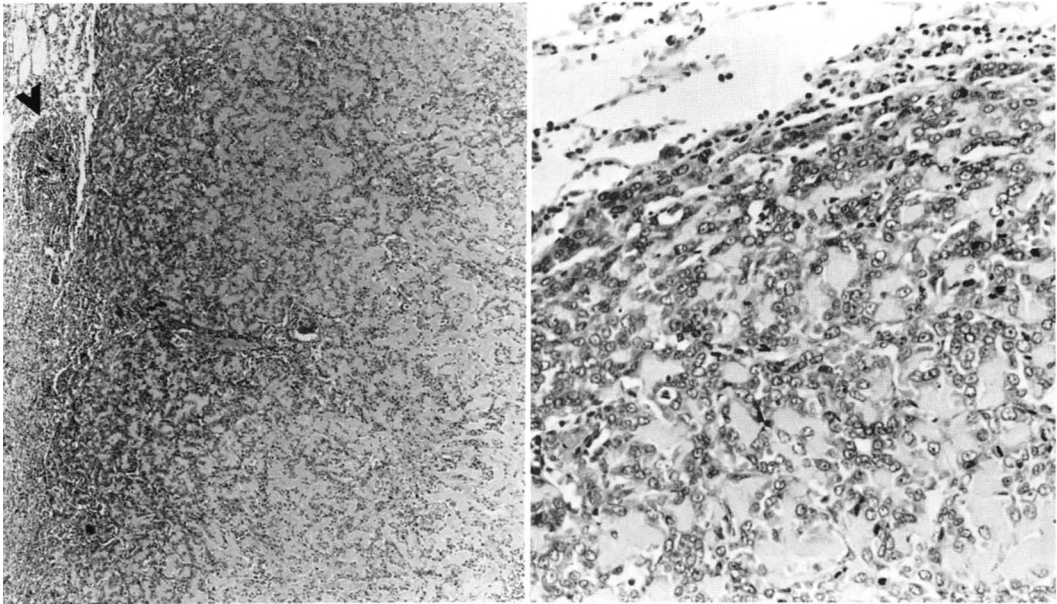


Fig. 1: Section from periphery of pulmonary osteosarcoma. Abundant osteoid trabeculae and adjacent perivascular accumulation of lymphocytes and histiocytes (arrow). HE.

Fig. 2: Section from similar area in figure 1. Crowded palisades of malignant osteoblasts. HE.

The possibility that another site of primary neoplasia was overlooked is considered unlikely. Furthermore the size and distribution of the tumors in this dog were not typical of metastatic osteosarcoma in lung. A similar conclusion was reached in the earlier report [2] in which hypertrophic osteopathy also was the presenting sign.

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