

LOW GRADE FIBROSARCOMAS IN GREEN TURTLES; IS FIBROPAPILLOMATOSIS GOING AMUCK?

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Abstract

The green turtle (*Chelonia mydas*) is protected under the U.S. Endangered Species Act and the Wildlife Laws of the State of Hawaii. Fibropapillomatosis (FP) is a disease of marine turtles characterized by multiple cutaneous masses ranging from 0.1 to more than 30 cm in diameter that has primarily affected green turtles. The disease has a worldwide distribution and has been observed in all major oceans and all species of marine turtles that are considered endangered or at risk of extinction. Where present, prevalence of the disease varies among locations, ranging from as low as 1% to as high as 90%. Although several viruses have been identified associated with the tumors, including herpesviruses, a retrovirus and a papilloma-like virus, the primary etiological agent remains to be isolated and identified. Concurrent infections of FP and cardiovascular trematodiasis have been recognized as the most important mortality factors of Hawaiian green turtles considerably reducing the survival of the species. The neoplastic processes previously observed by our previous studies and more recently during gross and histopathologic examination of 14 turtles collected in the Hawaiian Islands with FP suggested a synergistic effect of cardiovascular trematodes and the primary agent of FP. Tumors in the internal organs of some turtles were characteristic of fibropapillomas, fibromas, myxomas, and low-grade fibrosarcomas. This study suggested that when occurring together, spirorchidiasis and GTFP represent a debilitating and fatal syndrome of Hawaiian green turtles.

We describe the histopathology of cutaneous and internal spindle cell tumors found in green turtles from the Hawaiian Islands, and present histopathological and molecular evidence of the presence of low-grade fibrosarcomas. Histologically, some tumors of the nasopharynx, mouth and temporomandibular tissues appear to have an aggressive, invasive behavior. These masses are well demarcated from adjacent tissues but demonstrate infiltration of surrounding stroma and bone lysis. Although there is no evidence of vascular invasion or high mitotic activity, these tumors have been classified as low grade fibrosarcomas. The precancer to cancer sequence in the progression of benign to malignant tumors has been documented in other species with similar tumors, e.g. papillomas transforming into squamous cell carcinomas.

Although there is no evidence of vascular invasion or high mitotic activity, further research is necessary to demonstrate whether the visceral lesions are the result of metastasized external papillomas, or indeed are multiple independent processes. In other species, the precancer to cancer sequence in the progression of canine oral papilloma to carcinoma has been documented. We are trying to establish the biological behavior and molecular characterization of these tumors. Current retrospective and prospective studies are in progress to determine the implications of these novel findings.

Zusammenfassung (??)

Résumé (??)

Key words: green turtle, fibropapilloma, fibrosarcoma, Hawaiian Islands

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