BRIEF COMMUNICATIONS and CASE REPORTS

Papillary Adenocarcinoma of the Extrahepatic Bile Duct in a Holstein Cow

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Abstract. A 15-year-old female Holstein cow was presented with a history of anorexia and weight loss. Abnormal physical examination findings included poor body condition, dehydration, icterus, and photodermatitis on nonpigmented areas of the skin of the dorsum. At necropsy, the common bile duct was greatly enlarged, with thickened walls, and tightly adhered to the hepatic capsular surface and serosa of adjacent loops of the small intestine. Two sessile, yellowish, friable, well-circumscribed, cauliflower-like, bulging masses (14 and 8 cm in diameter) were attached to the inner surface of the common bile duct blocking its lumen. Microscopically, the tumor was composed of well-differentiated, columnar epithelial cells with oval or round, vesicular, basal nuclei arranged in papillary projections. Periodic acid-Schiff-positive material accumulated in the apical cytoplasm of the neoplastic cells. Immunostaining of the tumor cells was positive for cytokeratin (CK) of wide-spectrum screening and for CK 7. The diagnosis of papillary adenocarcinoma of the extrahepatic bile duct was based on the morphologic features of the neoplasm and evidence of local invasion. To the best of our knowledge, extrahepatic bile duct carcinomas have not been described in cattle.

Key words: Cattle; cytokeratin; extrahepatic bile duct; immunohistochemistry; neoplasm; papillary adenocarcinoma.

Tumors arising from intrahepatic bile ducts and gallbladder have been described in several species of domestic animals. In cattle, epithelial tumors of the intrahepatic biliary ducts and gallbladder have been reported as incidental findings in retrospective studies carried out in slaughterhouses. Epithelial tumors of the extrahepatic biliary tree have been reported in animals on rare occasions, including bile duct carcinomas in bears, sea otters, cats, and dogs. This is in contrast to the much higher prevalence of carcinomas of the extrahepatic biliary tract reported in humans. Tumors of the extrahepatic biliary tree have not been reported in cattle. This report describes the clinical, pathologic, and immunohistochemical aspects of a single case of papillary adenocarcinoma of the extrahepatic bile duct in a Holstein cow.

A 15-year-old female Holstein-Friesian cow was presented to a local university veterinary teaching hospital with a history of anorexia and weight loss. On physical examination, poor body condition, dehydration, icterus, and photodermatitis on the nonpigmented areas of the skin of the dorsum of the body were observed. Laboratory analyses were not done. The cow was humanely killed because of poor prognosis.

A complete necropsy was performed immediately after euthanasia. The carcass was thin. Grossly, the common bile duct was greatly enlarged and converted into a large outpouching (30 cm in diameter) due to marked dilation of its lumen. The extrahepatic biliary tree was dissected and carefully scrutinized to find out the site of origin of the neoplasm. The common bile duct was tightly adhered to the ventral surface of the liver and serosa of the adjacent loops of the small intestine. The extrahepatic duct was markedly distended with an orange liquid (exudate and bile) mixed with necrotic debris. The common bile duct was greatly thickened, and its internal surface was shriveled and had dark gray discoloration. Two small, separate openings arising from the neoplasm within the common bile duct established new, patent communications with the adjacent proximal duodenum. One of the openings measured 5 cm in diameter, whereas the other had 2.5 cm in diameter. The outlet of the larger abnormal communication between the neoplastic extrahepatic duct and the small intestine had yellow, raised edges. No gross changes were observed in the normal aperture of the common bile duct into the proximal duodenum. Two yellowish, friable, well-circumscribed, cauliflower-like, bulging masses measuring approximately 14 and 8 cm in diameter were attached to the inner surface of the common bile duct blocking its lumen (Figs. 1, 2). The walls of the other extrahepatic ducts were markedly thickened, dilated, and filled with inspissated, discolored orange bile. The gallbladder was greatly enlarged, measuring 25 cm in diameter, had thickened walls, and was distended with thick and lumpy bile. The liver was firm and diffusely orange with arborizing dilated and distorted biliary ducts throughout the capsular surface. On cut section, the larger intrahepatic bile ducts were thickened because of fibrous tissue proliferation and ectatic and discolored orange because of bile accumulation. In addition, jaundice was observed in the mucous membranes, internal organs, intima of large vessels, and fasciae of muscles. No significant gross lesions were found in the pancreas or other organs.

Samples of the extrahepatic bile duct neoplasm, the central nervous system (CNS), and different tissues and organs, including the liver, hepatic lymph nodes, and pancreas, were...