

## Hepatic Cirrhosis with Increased Copper Levels in a Young Cocker Spaniel

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Young Cocker Spaniels are at increased risk for early onset chronic hepatitis that quickly becomes cirrhotic. Copper accumulation has been associated with chronic hepatitis in several breeds including Cocker Spaniel. In this breed, however, it has been reported rarely and it is not determined whether increased copper levels are a cause or an effect.

A 4-year-old female American Cocker Spaniel dog was presented with inappetence, shivering and abdominal distension. Abnormal laboratory findings were increased liver enzyme activities, hypoalbuminemia, hypoglycemia, low BUN and increased serum bile acid levels, which suggested a hepatic disease. In abdominal ultrasonography, irregular hepatic lobes and massive ascites were detected. Computed tomography did not demonstrate any abnormal findings in portal veins. Ascites and an irregularly nodular, small liver were observed on exploratory laparotomy and two biopsy samples were taken for histopathologic diagnosis. This dog diagnosed as a chronic hepatitis with cirrhosis by histopathologic examination. With additional copper stains, most of hepatocytes contained much accumulated copper granules. Quantitative determination showed high copper concentration in the liver.

Copper accumulation results as either a primary metabolic defect in copper metabolism unique to some breeds or as a secondary event associated with chronic hepatic cholestasis resulting in a decrease in biliary excretion of hepatic copper. Regardless of the cause at a certain concentration copper contributes to hepatocellular damage.

This dog has been successfully managed with D-penicillamine, low copper diet and supportive therapies since at the time of diagnosis for 5 months. We are reporting of a young Cocker Spaniel suspected copper-associated hepatic cirrhosis.

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