

# Unusual liver disease in young dogs in the Darwin area

## Animal Health Surveillance Quarterly feature article

In late August 2016, a private veterinarian alerted the Department of Primary Industry and Resources (DPIR) to an unusual presentation of unexplained and severe liver failure and ascites in young dogs. The affected dogs were from various rural properties, belonging to various owners, within a 5km radius in the Darwin rural area and the cases occurred within a six week period. Liver disease is unusual in young dogs, and, up until shortly before their death, mild illness had been noted only in some of the animals.

Upon investigation and liaison with other private veterinarians in the area the DPIR identified a further six potential cases of the syndrome. Of the nine known cases, five dogs have died or been euthanized. The dogs have been large breed and between four months and 5 years old. The main presenting sign in all dogs was severe abdominal distention, of between a few days to six weeks duration.

Haematology from six of the clinical animals has shown mild, non-regenerative anaemia, with mild to moderate elevations in bilirubin, alkaline phosphatase and gamma glutamyltransferase, and low serum albumin. Some of the dogs have displayed a low normal blood urea nitrogen.

Full post-mortem examination performed on three of the dogs revealed the main findings in all dogs to be severe ascites, with the fluid being watery and either clear or blood-tinged, and firm, slightly shrunken liver. Histopathological examination of liver tissue has shown a consistent moderate to severe chronic diffuse hepatic fibrosis, as a sequel to a significant degree of hepatic necrosis, with no evidence of inflammatory or neoplastic disease occurring. There were no notable findings in other tissues in two cases, and acute gastroduodenal ulceration in one of the dogs.

Given the minimally inflammatory nature of the liver lesion, a hepatotoxin is suspected, although the nature of the liver lesions are not suggestive of a specific toxin. As yet, no common source of possible toxin exposure has been identified. An infectious aetiology is deemed less likely, however, since the lesions were chronic at the time of presentation, a prior infection causing liver necrosis and fibrosis has not been definitively ruled-out. Referral virus isolation at the Australian Animal Health Laboratory has so far failed to detect a viral cause in samples submitted from four of the cases.

The last known case occurred in late November 2016. Other similar age dogs from the affected households, including siblings of affected dogs, remain clinically healthy.

The DPIR continues to liaise with private veterinarians and is investigating any cases submitted to Berrimah Veterinary Laboratory (BVL) for their potential public health and animal health significance. There are no known associated human health concerns. Dog owners are advised to monitor their animals closely and contact their regular veterinarian if they are concerned.

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Figure 1: Ascites in an affected dog. Note shaved patch from abdominocentesis performed antemortem at veterinary clinic.



Figure 2: Gross image of liver. The liver was small, diffusely firm and bronze in colour, with vague patchy red discolouration . The liver had a slight rugose feel to the surface, and diffusely there was an exaggerated zonal pattern. Fibrin tags between diaphragm and liver.



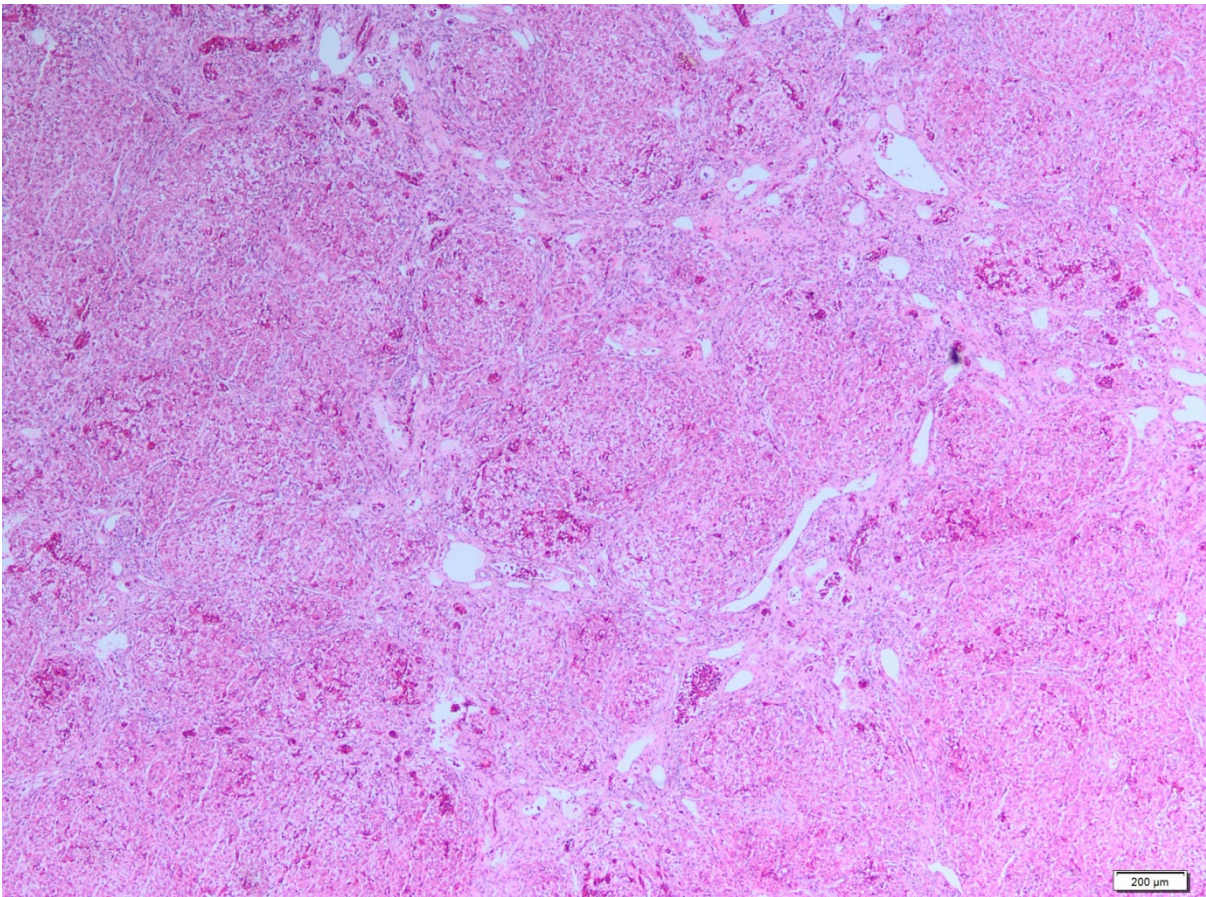


Figure 3: Liver histology. The normal lobular architecture has been replaced by disorganised islands of hepatocytes separated by fibrous tissue. Lymphatic vessels are distended. HE

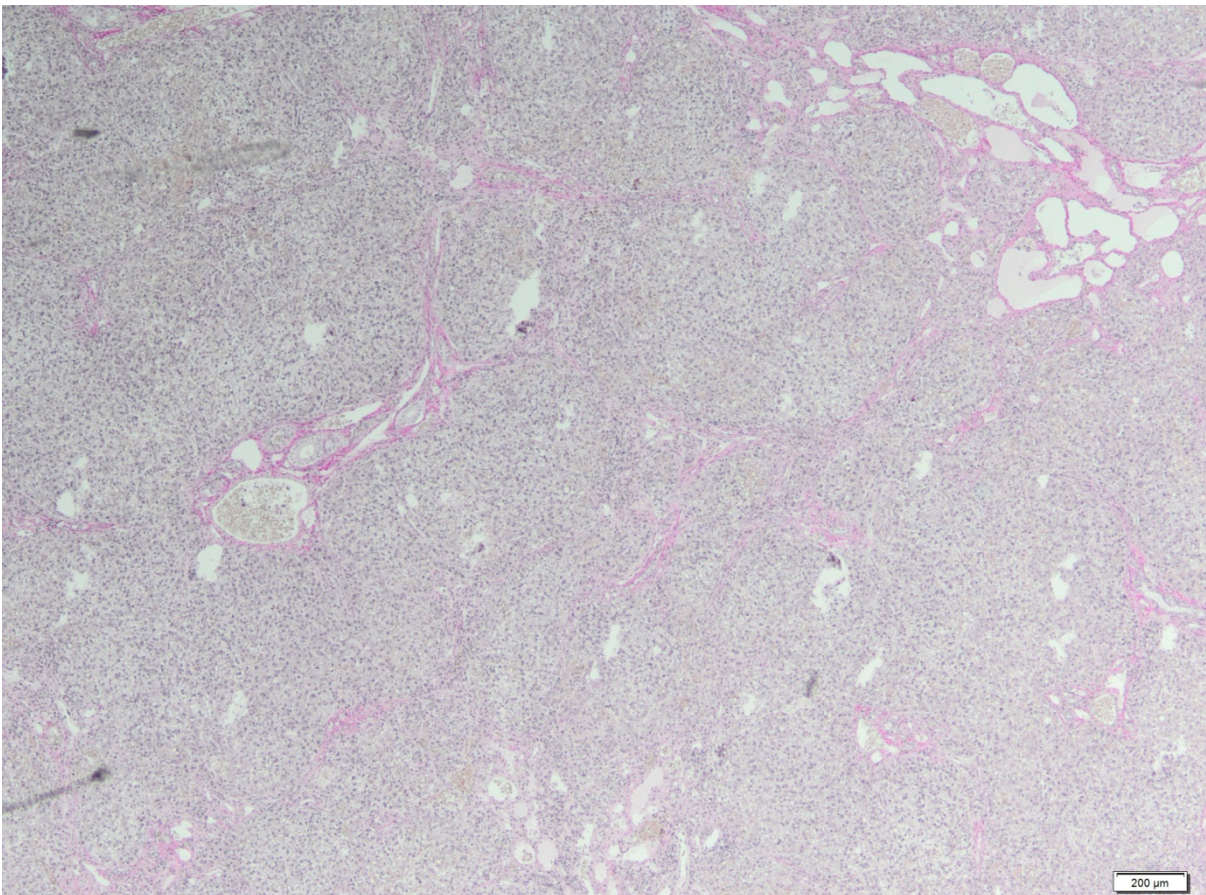


Figure 4: Liver histology (Van Geisen stain). Note pink staining fibrous tissue.