## G7 Normal Isn't What It Used to Be — The Spectrum of Liver Abnormalities in an Australian Autopsy Population

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After attending this presentation, attendees will gain an appreciation of the spectrum of liver normality and disease in an autopsy population.

This presentation will impact the forensic science community by providing updated information, including the range of disease normality, and normal and abnormal weights of relevant organs in the body.

The autopsy is an excellent method for cataloguing disease, whether minor or very serious, and whether incidental or directly related to the cause and manner of death. Autopsy reports should describe pathology in great detail, and even minor pathology is therefore often graced with a detailed description. However, what is normal and what is disease? Is normal the absence of any pathological change or is it what is found in the majority of the population who appear to be healthy? This paper examines the problem of what is a normal liver in a population where aetiological factors for liver abnormalities are present in more than half of all deaths reported for medicolegal autopsy in Sydney, with excessive alcohol consumption, obesity, and hepatitis B and C virus infection predominating. Many abnormalities of the liver are clinically silent, although they can have a significant role to play in the death. For example, a person with an enlarged fatty liver is much more likely to sustain a liver laceration in blunt abdominal trauma than a person with a morphologically normal liver.

This study evaluated the prevalence of liver abnormalities in an autopsy population at the Department of Forensic Medicine, Sydney. Data was extracted from 1,472 autopsy reports from the year 2008. Analysis was performed on the data collected, producing demographic information, cause of death, information on the nature and extent of liver abnormality at autopsy, and information on organ weights in this population.

In this analysis, structural liver abnormalities were very common, with the liver not described as normal in 83.4% of all reports examined. Almost one third of cases had histologically diagnosed steatosis and in the morbidly obese (body mass index greater than $35kg/m^2$) this approached 50% of cases. There was steatohepatitis in a further 4% and cirrhosis in 5.6%. In those cases where the history provided documented excessive alcohol consumption, there was steatosis in 36.4% of cases and progression to cirrhosis in a further 24%. There was hepatitis C positive serology in 5% of cases and cholelithiasis was reported in more than one in seven cases.

The mean liver weight for men was found to be 1,747 grams and 1,472 grams for women, with a minor increase in mean liver weight in those where pathology was identified. The mean spleen weight in men was 210 grams and 153 grams in women, with only a modest increase in splenic weight to a mean of 289 grams in cases with hepatic fibrosis and cirrhosis, both of which can be expected to cause portal hypertension with associated significant splenomegaly.

This study of liver pathology in a medicolegal autopsy population provides useful information on the extent and nature of liver abnormalities which can be expected to be seen. Despite there being a very high prevalence of liver abnormalities in this series, only a small number of cases were considered to have directly or indirectly died as a result of their liver disease. Although this series is not representative of that expected in Australian deaths in general, given the understandably higher rates of death due to physical injuries, poisonings and other external factors than in the general population, this study nevertheless provides useful data which can also be extrapolated to the living general population. It is questioned whether more than four out of five cases in this series had liver disease, or whether in fact many of the changes seen in the liver at autopsy can be reasonably accepted as normal morphology.

**Autopsy Pathology, Normal Range, Liver Pathology**

 ** Presenting Author*