

Cirrhosis of the liver



Digital Pathology Collection

Case 13 2010

Ref. XVIII:viii:35





Clinical data

- The patient was a 31 year old coloured man with a 3 month history of abdominal swelling, epigastric pain, weight loss and jaundice.
- He drank 3 bottles of wine a day.
- On examination he had gross ascites and hepatomegaly.
- A week after admission he had an episode of haematemesis and gastroscopy showed that he was bleeding from oesophageal varices.
- Despite sclerotherapy he had repeated episodes of bleeding and developed signs of liver and respiratory failure.



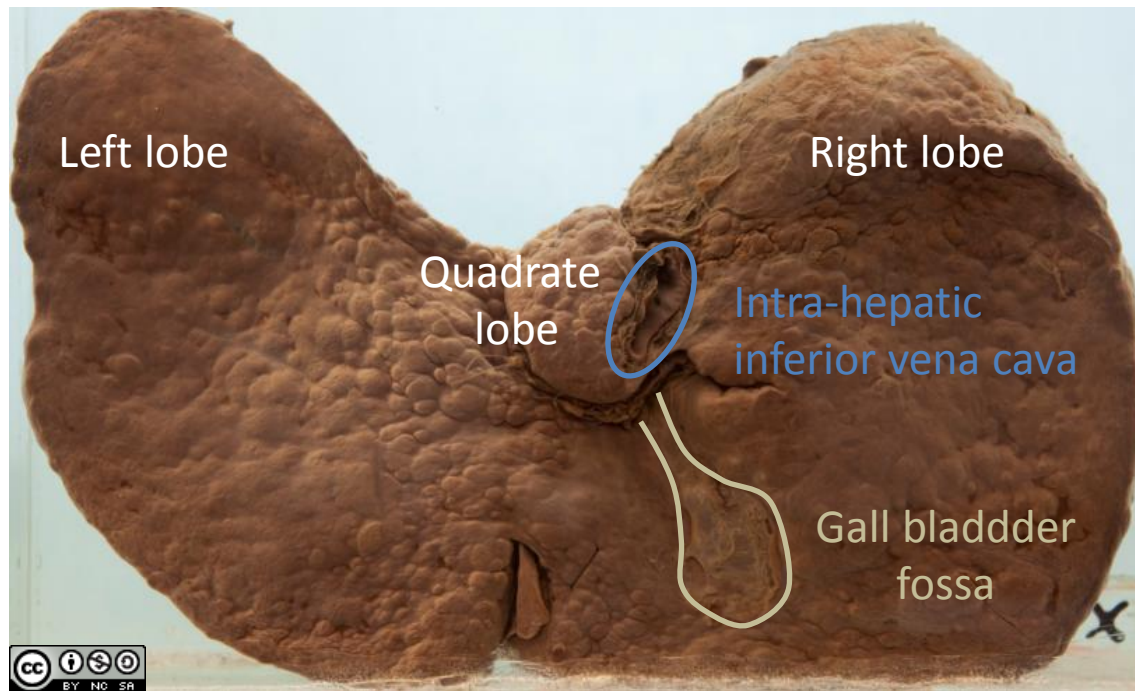
Some laboratory investigations

- Chemistry
 - albumin ↓
 - AST and ALP ↑
 - Total and conjugated bilirubin ↑
 - Alpha-feto protein ↑↑
- Virology
 - Hepatitis B surface antigen **positive**



Pathology

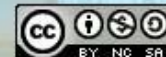
- At autopsy the liver weighed 2530g (normal \pm 1500g).
- It is diffusely riddled with nodules, compatible with cirrhosis.



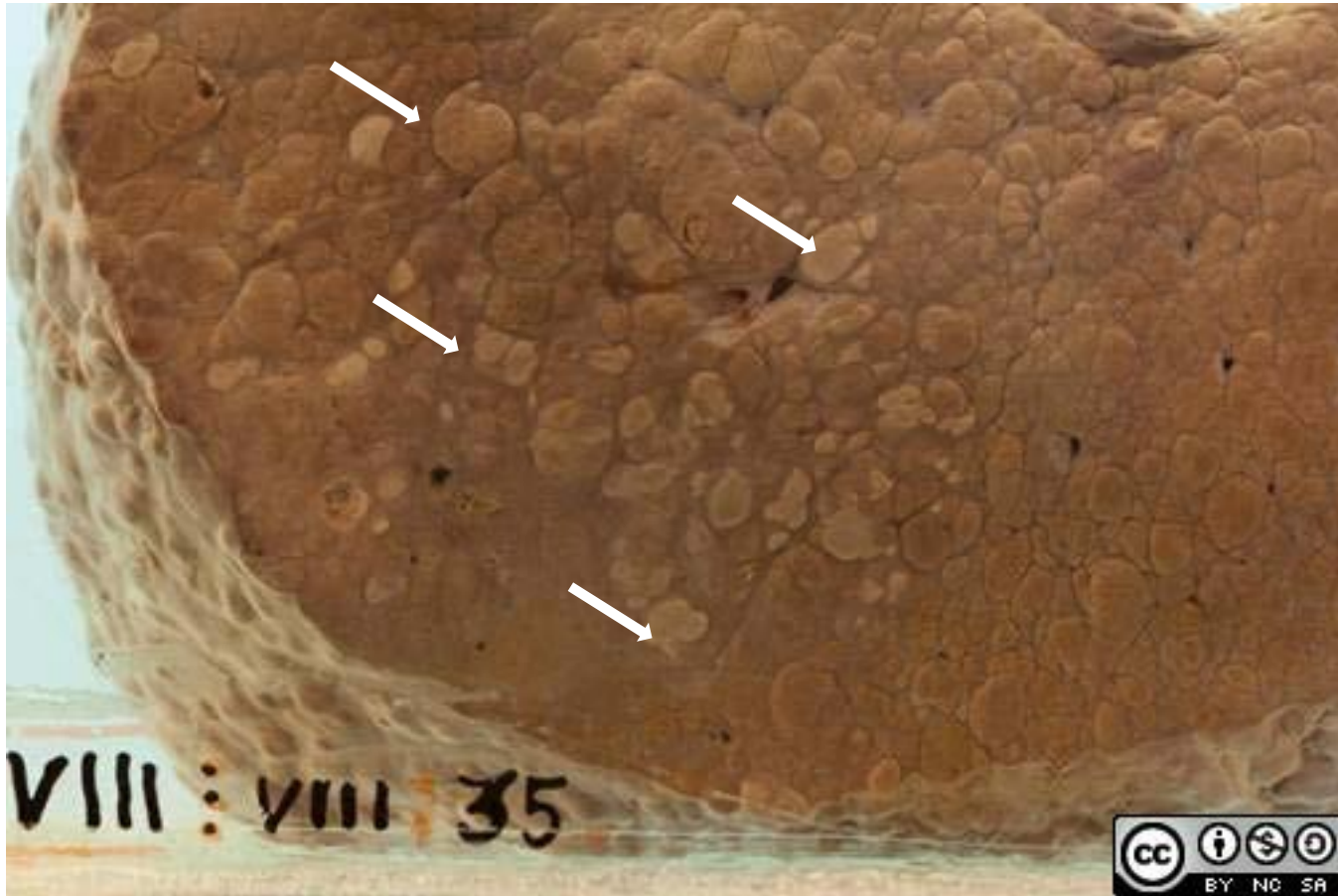
Inferior view of the liver



- On the cut surface it can be seen that the nodules are mostly >3mm and up to 1cm in size, so this is predominantly a macronodular cirrhosis.



- A close up of an area in the right lobe shows that quite a few nodules have a suspicious fleshy appearance.



Histology

- Microscopy confirmed the macroscopic appearance of cirrhosis.
- In addition there was extensive replacement by poorly differentiated hepatocellular carcinoma.

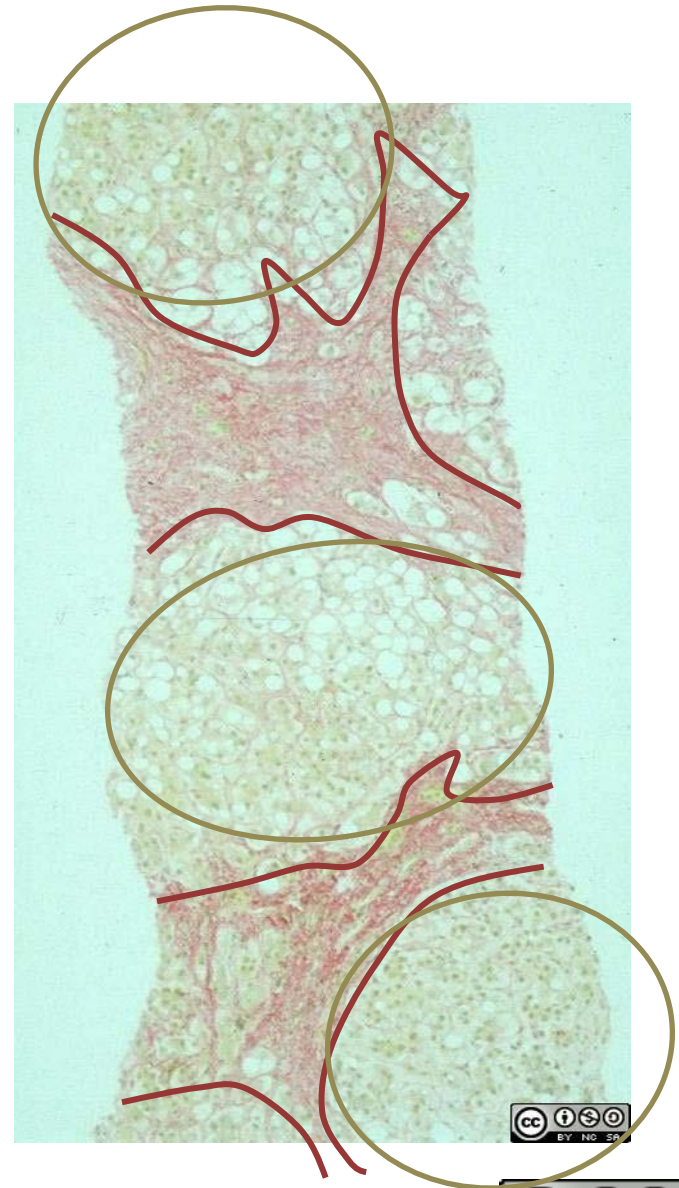


A few notes on cirrhosis

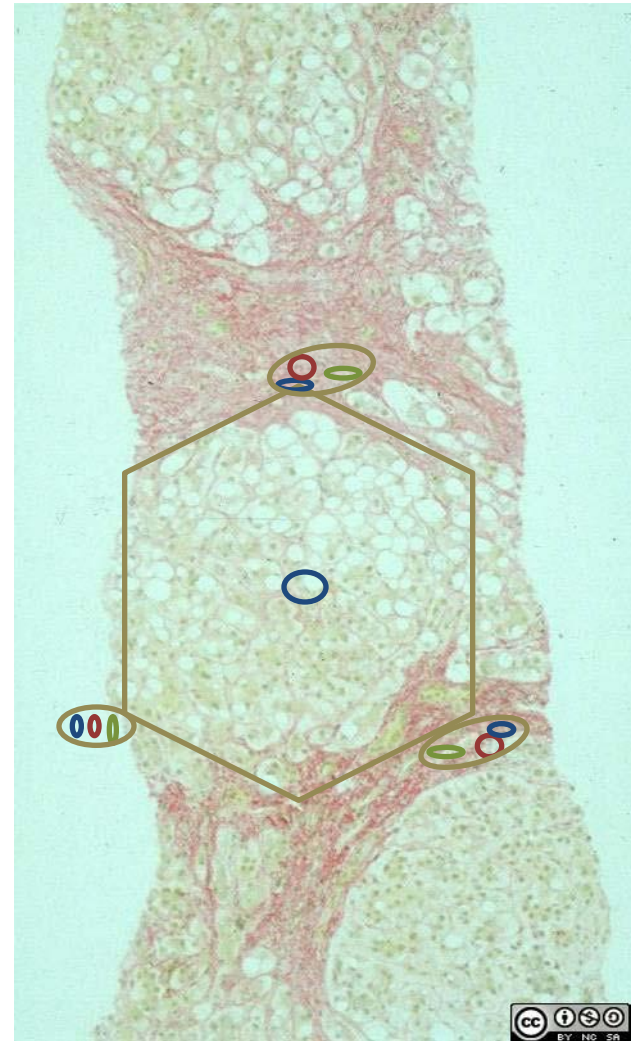


- Cirrhosis is a response to *diffuse* injury of the liver parenchyma.
- It is characterised by two main processes
 - constrictive fibrous scarring (**fibrosis**) and
 - **regenerative activity**which together result in the nodularity.
- The architecture of the entire liver and its vasculature is disrupted.

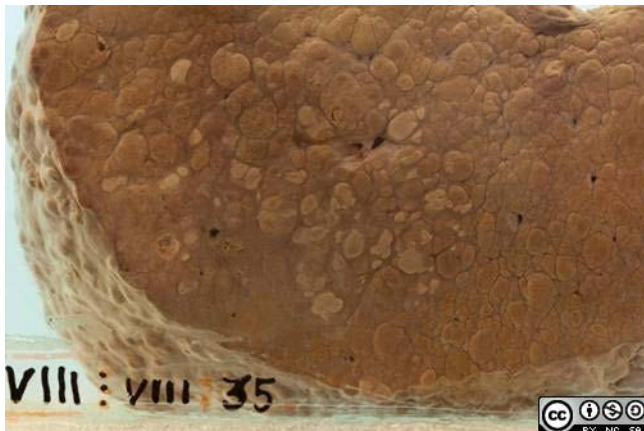
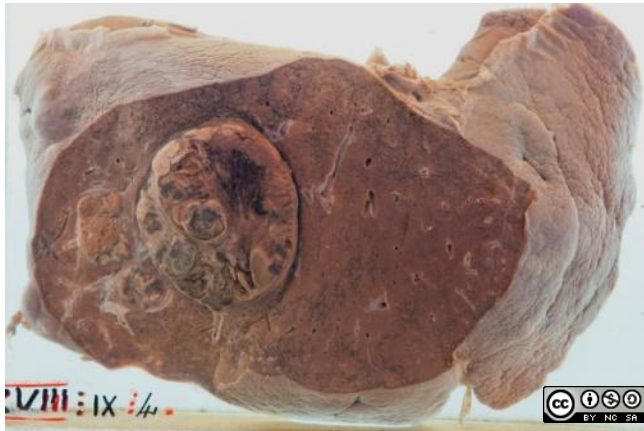
- This fragment of cirrhotic liver was sampled by liver biopsy.
- Fibrous septae (staining red) encircle regenerative nodules of liver cells.



- The normal liver lobule structure is distorted.
- Portal tracts have largely been obliterated by the fibrosis.
 - the obstructed portal circulation leads to *portal hypertension*.
- The central venule of each liver lobule has disappeared.
 - the disrupted lobular circulation leads to *hepatic dysfunction*.



A few notes on hepatocellular carcinoma (HCC)



- HCC often presents as a single large liver mass or may have a multifocal origin.
- It often but not always arises in a cirrhotic liver.
 - Accumulation of DNA mutations during repeated cycles of regenerative cell division is an important factor in the pathogenesis of HCC.



Aetiology and local epidemiology

- The most important causes of both cirrhosis and HCC are alcohol and chronic viral hepatitis (B & C).
- Sub-Saharan Africa has historically had a high prevalence of hepatitis B ($\pm 10\%$) and consequently a high incidence of HCC (29 per 100 000 in South Africa, 113 per 100 000 in Moçambique).
- In this context HCC presents in young adults (20 - 40 years, more often male) who have acquired hepatitis B in childhood or even *in utero*.
- The inclusion of the hepatitis B vaccine in the childhood immunisation programme in South Africa since 1995 will almost certainly reduce viral cirrhosis and HCC over time.



Related specimens in the collection

- XVIII:viii:39
A typical fatty liver from a patient with high alcohol intake. Early changes of cirrhosis were seen on microscopy.
- XVIII:viii:34
Predominantly micronodular cirrhosis typical of alcoholic liver disease.
- XVIII:ix:4
Hepatocellular carcinoma occurring as a single large nodule with a few daughter nodules.



References & links

- Kew, MC. Progress towards the comprehensive control of hepatitis B in Africa: a view from South Africa. Gut, 1996; 38 (Suppl 2):S31-S36
- To reinforce what you have learned here, look at the first 19 images of the section on Hepatic Pathology in WebPath
<http://library.med.utah.edu/WebPath/LIVEHTML/LIVERIDX.html#1>





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