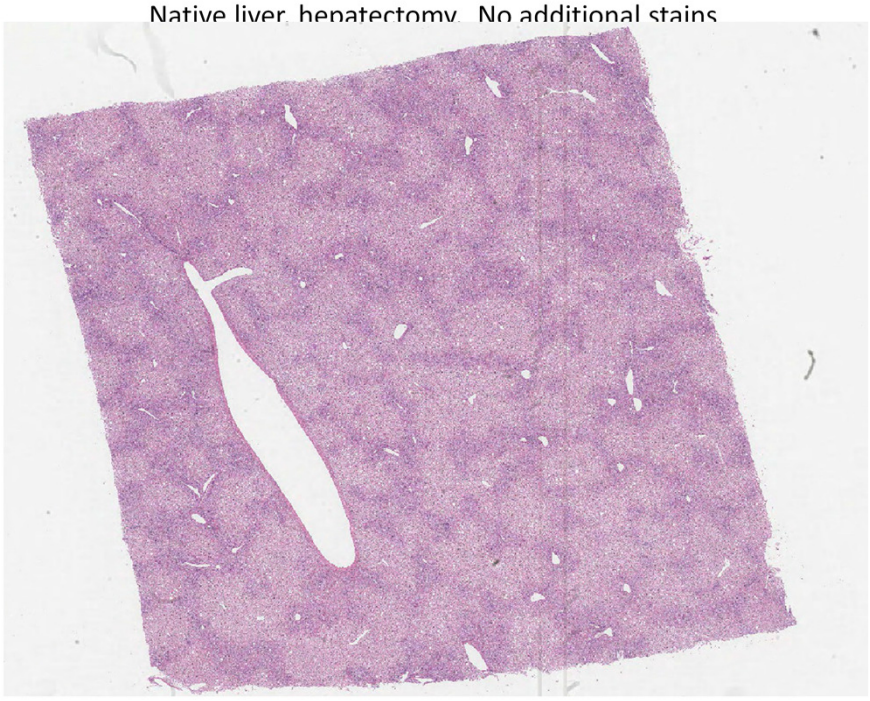
Case LS9 30 F

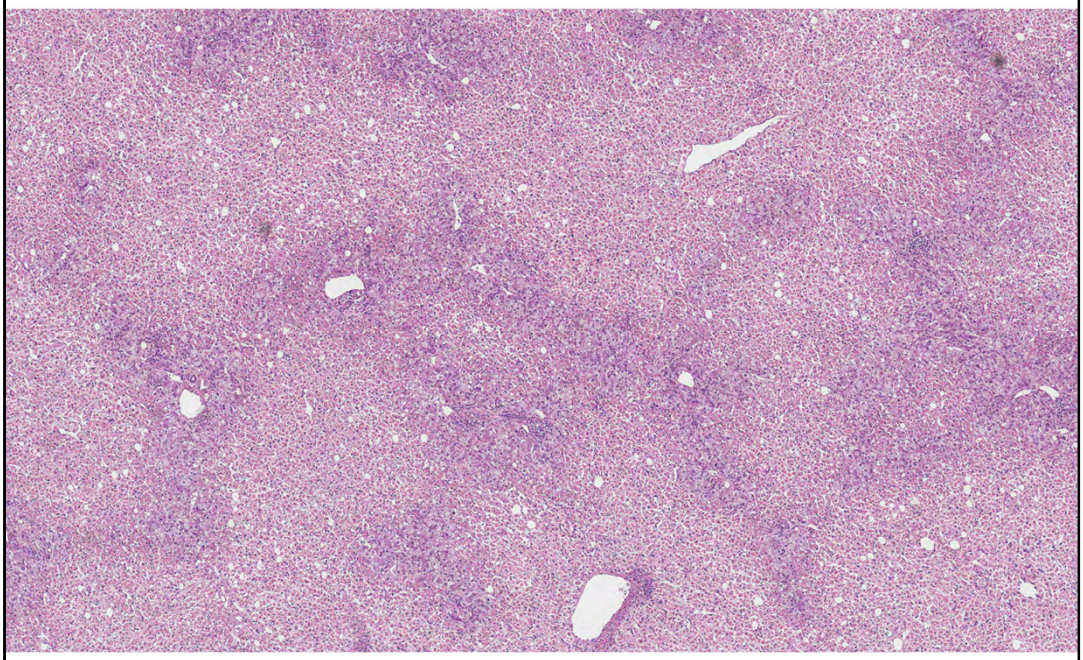
Paracetamol overdose

Native liver, hepatectomy. No additional stains



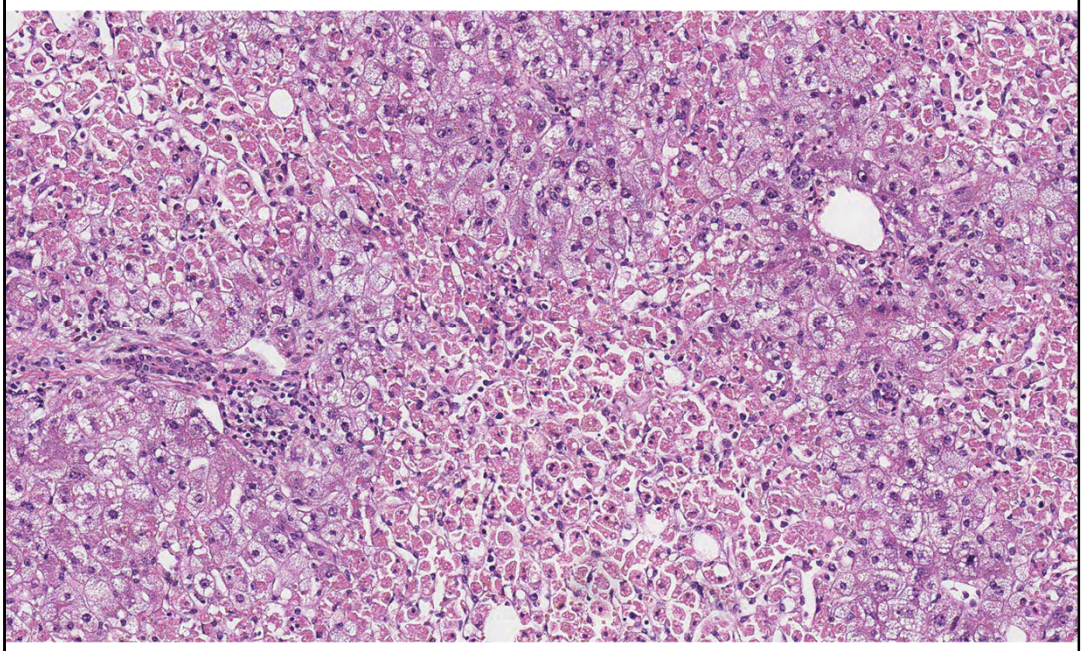
Low magnification – the enhanced zonal architecture of the liver is highlighted, with darker staining zone 1 periportal areas and paler staining zone 2-3. This is therefore entirely recent disease, with no bridging abnormality of the architecture, either fibrosis or necrosis.

LS9



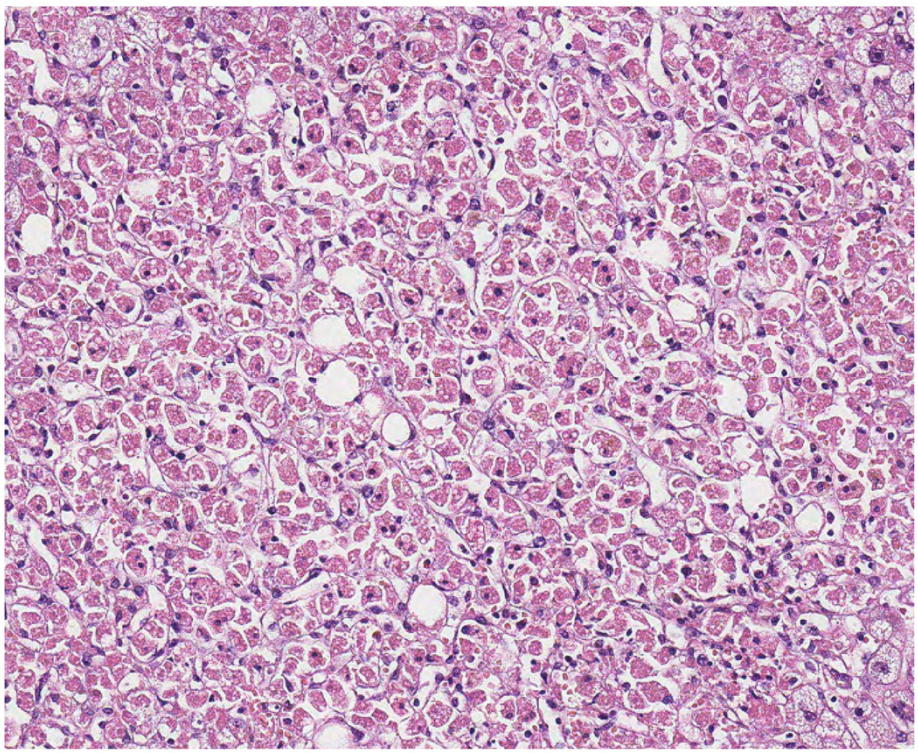
There is no inflammatory component to the histology.

LS9



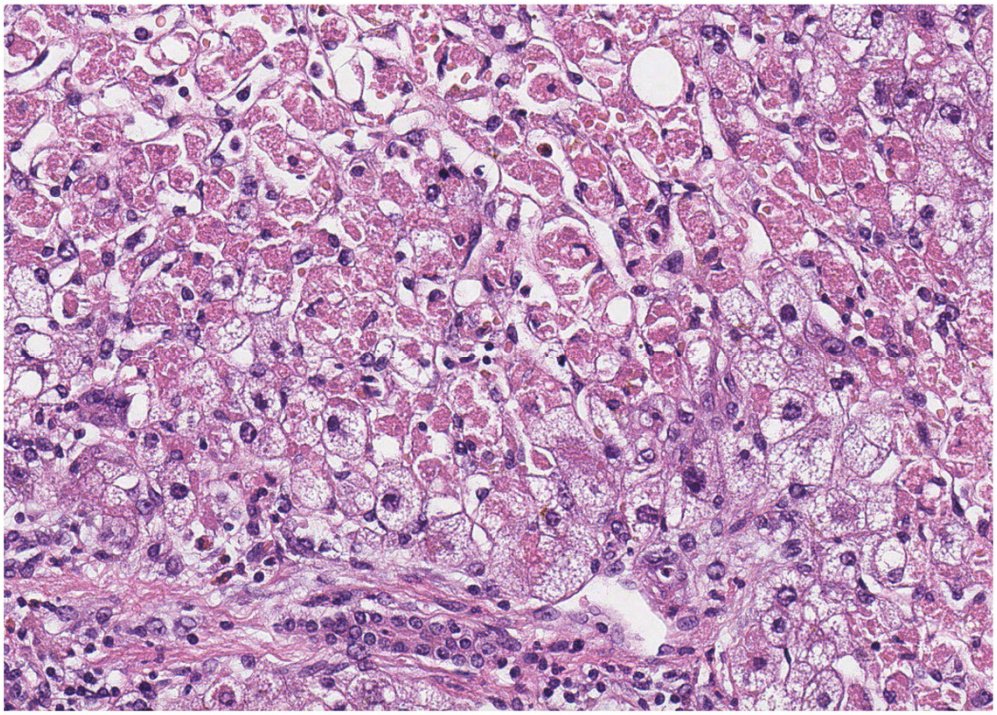
At this magnification, the portal areas with surviving periportal hepatocytes are seen. The zone 2 and 3 areas show coagulative necrosis of the hepatocytes, which are still in place without scavenger Kupffer cell activity.

LS9



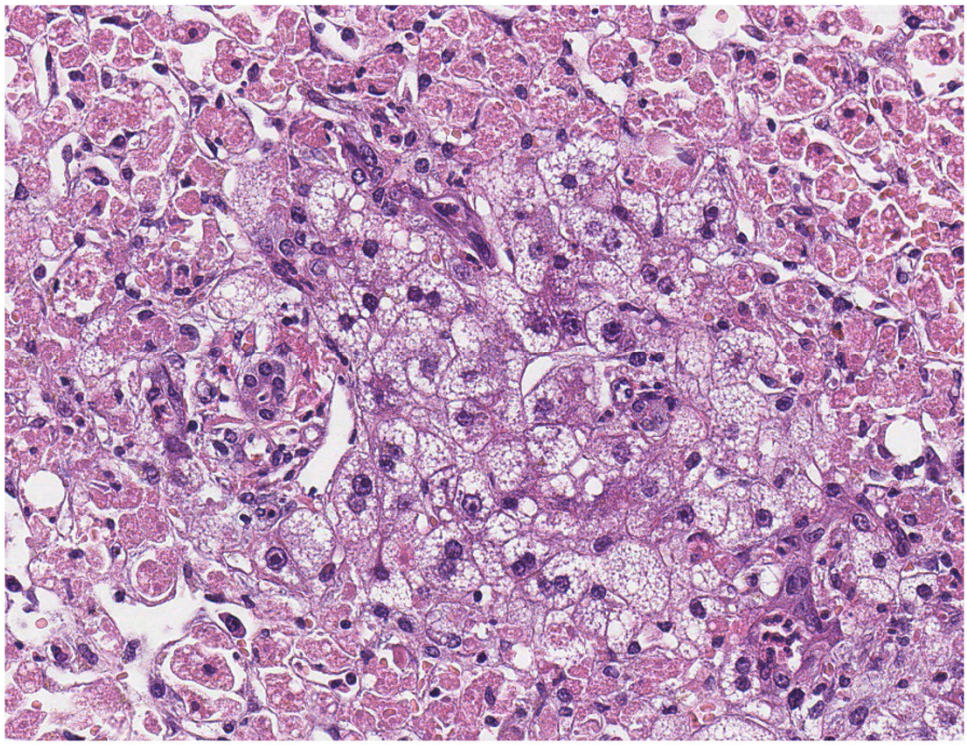
There may be some pre-existing steatosis visible.

LS9



The periportal hepatocytes may be swollen as here. The depth of the periportal zone of surviving hepatocytes is relatively uniform in all areas of the liver – unlike the pattern in severe hepatitis with confluent necrosis where there are usually geographic areas of differing severity.

LS9



Swollen zone 1 hepatocytes, a little cholestasis in a ductile, but no portal inflammatory infiltrate at all in the small portal tract.

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A	Ischaemic hepatopathy
B	Drug induced liver injury
C	Acute hepatitis with necrosis
D	Submassive necrosis
E	Zonal necrosis c/w paracetamol toxicity

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A	Ischaemic hepatopathy
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Correct response: E

This is the very characteristic appearance of acute liver necrosis due to paracetamol toxicity. The uniform coagulative necrosis may be accompanied by congestion but there is no inflammatory infiltrate. When transplant (or death) is in the first few days following the overdose, the liver is a normal size and there is no 'collapse'. The only potential differential diagnosis for this histological pattern is ischaemic injury from left and right ventricular failure – usually clinically recognised.

Comments on other responses:

A: ischaemic hepatopathy – may look very similar but the clinical setting is different. There would usually also be congestion (which may be a feature of paracetamol toxicity, although not seen here).

B. Drug induced liver injury – this is a correct but incomplete response. Even without the clinical information, the histology would suggest paracetamol toxicity.

C. Acute hepatitis with necrosis – the pathophysiology of liver injury is not of a hepatitis – inflammatory response, but of coagulative necrosis due to toxicity to hepatocyte membranes causing instant cell death. There may also be a component of ischaemic injury due to sinusoidal endothelial necrosis obstructing sinusoids, a severe form of sinusoidal obstruction syndrome.

D. Submassive necrosis – again, correct but incomplete. Wherever possible, liver histology should include a morphological description of a pathological process, together

with a comment on the cause or possible causes.