

## Somatisation and female gender are risk factors for bloating and abdominal distention in the general population

Abdominal bloating and visible distention are common, but the mechanisms behind these bothersome symptoms are unclear. Little epidemiological data on bloating, or separate data on distention, exist. In this issue of *Gut*, Jiang et al present a population-based study from Olmstead County, Minnesota, including 2259 subjects, where they used validated questionnaires and abstracted data from the medical records of the included subjects. The age- and sex-adjusted prevalence for bloating was 19.0% and for visible abdominal distention 8.9%. Female gender and somatisation, assessed with a somatic symptom check list (SSC), were found to be risk factors for bloating alone and separately for distention. Moreover, female gender, higher SSC scores, constipation-predominant IBS, dyspepsia and widespread GI symptoms were predictors for having distention over bloating alone. When looking at different functional GI disorders (FGID) or gastroesophageal reflux disease (GORD), the proportion of subjects with bloating and/or distention

separately was higher in each of these disorders versus subjects with no FGIDs (see figure). Further research on underlying mechanisms and effective treatments for these common and bothersome symptoms seems important. **See page 756**

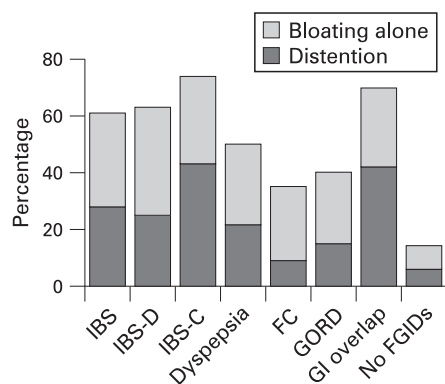
## Peptide-containing mucus layer provides a combined physical and biochemical shield against bacteria

Recent recognition of increased mucosally adherent bacteria in inflammatory bowel disease has focused attention on the importance of innate immunity in defence against bacteria, particularly the role of anti-microbial peptides such as the defensins secreted by Paneth cells. This current study examines spatial distribution of such anti-microbial peptides in the lumen, mucus layer and crypts. Although both crypt and mucus preparations exhibited obvious antibacterial activity against a range of commensals and pathogens, this was absent in the luminal contents. Biochemical assessment using high performance liquid chromatography confirmed the absence of a range of anti-microbial peptides such as defensins and

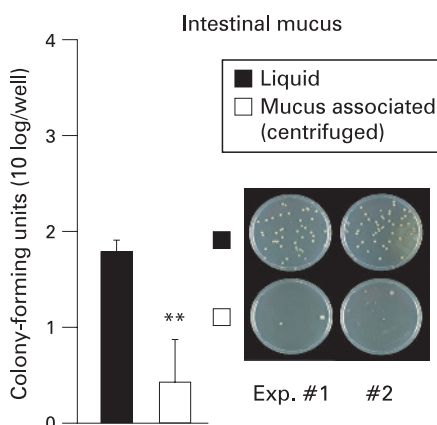
ribosomal proteins that were abundant in mucus and crypts. Close contact between bacteria and mucus barrier was modelled by forcing bacteria against a mucus layer by centrifugation, which markedly reduced the viability of a probe bacterium *Bacillus megaterium* (see figure). The authors conclude that defensins and other anti-microbial peptides are concentrated in mucus, thereby protecting the epithelial barrier from luminal bacteria. **See page 764**

## Fatigue—a significant problem in patients with non-alcoholic fatty liver disease

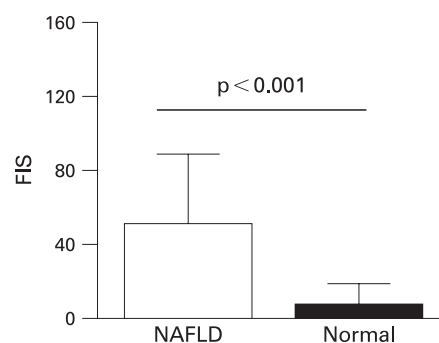
Fatigue is a significant problem in many chronic diseases, and in the field of hepatology it is especially well known in patients with primary biliary cirrhosis (PBC). In this study, Newton and co-workers used the Fatigue Impact Scale (FIS) to demonstrate that fatigue is a relevant problem in patients with non-alcoholic fatty liver disease (NAFLD) as well. They reported more severe fatigue in NAFLD patients than in age-, sex- and BMI-matched controls (see figure), and similar to that in PBC patients. The authors also assessed the relationship to physical function by using actigraphy and biological associations of fatigue in NAFLD. Importantly, fatigue in NAFLD patients was associated with inactivity and excessive daytime sleepiness, but not with biochemical and histological markers



Proportion of subjects with bloating and visible abdominal distention among different functional GI disorders (FGIDs) and gastroesophageal reflux disease (GORD) and in subjects with none of these disorders (No FGIDs). FC, functional constipation; IBS, irritable bowel syndrome; IBS-D, irritable bowel syndrome with diarrhoea; IBS-C, irritable bowel syndrome with constipation.



Numbers of colonies of *Bacillus megaterium*, assessed by plating onto agar plates, were markedly reduced when bacteria were forced into close contact with mucus by centrifugation (open column) compared with bacteria free in the liquid phase (solid column).



Fatigue, assessed using the Fatigue Impact Scale (FIS), is higher in patients with non-alcoholic fatty liver disease (NAFLD) compared with age-, sex- and BMI-matched controls.

of the liver disease or with insulin resistance. Studies trying to explain the association between fatigue and NAFLD are now needed. Autonomic dysfunction, the metabolic syndrome and having a chronic disorder per se, or factors produced by the liver acting extrahepatically, are potential candidates.

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## Liver disease severity and the severity of the bleeding episode are strong risk factors for short-term mortality after acute variceal haemorrhage

Acute variceal haemorrhage (AVH) is associated with significant morbidity and mortality, but relevant risk factors for short-term mortality when using state-of-the-art treatment are unknown. An international, randomised, double-blind, placebo-controlled clinical trial investigating the role of lanreotide as an adjunct to endoscopic therapy for the control of AVH in patients with cirrhosis, with negative results, was used to evaluate risk factors for 6-week mortality and re-bleeding within 5 days. Only the model for end-stage liver disease (MELD) score (including creatinine, bilirubin and international normalised ratio) and units of packed red blood cells (PRBCs) transfused in the first 24 h were associated with 6-week mortality. The MELD score also predicted the early re-bleeding risk together with the presence of a clot on a varix. Patients with a MELD score  $\geq 18$  (see figure), requiring  $\geq 4$  units of

PRBCs or with active bleeding at endoscopy were found to be at increased risk of dying within 6 weeks. These data will help to optimise the clinical management of patients with AVH.

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## Value of transient elastography for monitoring fibrosis progression in patients with recurrent hepatitis C after liver transplantation

The increasing incidence of hepatitis C virus (HCV)-related cirrhosis means that many such patients are undergoing liver transplantation and need repeated biopsies to evaluate post-transplant recurrence of HCV. In this study of 95 such patients, transient elastography (TE) and liver biopsy (LB) were performed contemporaneously. As others have reported, TE values correlated well with scores for fibrosis, and a cut-off value of 11.9 kPa gave a sensitivity of 82% and a specificity of 96% for detecting those with a fibrosis stage  $\geq 4$  (see figure). In 40 patients, paired LB and TE were performed 6–21 months apart. The changes in histological grading and staging correlated positively with the changes in TE. Twenty-six patients with decreased or stable fibrosis scales also had decreased or stable TE values. Using a cut off of an increase  $\geq 30\%$  of baseline values, TE had a sensitivity of 86% and specificity of 92% of detecting a one point increase in staging score during follow-up. The authors suggest that patients with stable or decreasing TE

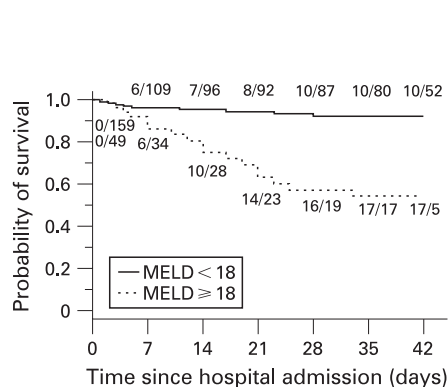
might be able to avoid routine biopsy during follow-up.

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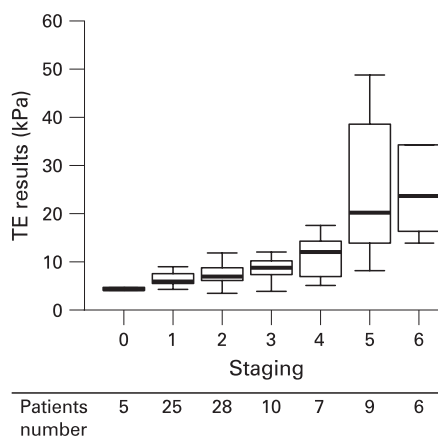
## Value of $\alpha$ -fetoprotein in detecting hepatocellular carcinoma in the Budd-Chiari syndrome

Budd-Chiari syndrome (BCS) due to hepatic venous outflow obstruction is rare, so this series of 97 such patients with a follow-up of more than 1 year is valuable in guiding those who only see an occasional case. Forty-three patients had liver nodules and 11 of them were found to have developed hepatocellular carcinoma (HCC). Risk factors for developing HCC were male sex (8/11) and the presence of the mutant Factor V Leiden, which was found in 6/11 with HCC compared with 14/80 without HCC. The usual imaging features of HCC were not helpful in these patients and in particular wash-out on the portal venous phase of contrast enhanced CT scan had low sensitivity, possibly because of the venous congestion associated with BCS. However, as the figure shows, 8/8 with an  $\alpha$ -fetoprotein (AFP)  $>1.5$  ng/ml were found to have HCC, whereas only 3/35 with AFP  $<1.5$  ng/ml had HCC. As the mortality from BCS has declined and treatment options for HCC have increased, it becomes relevant to screen such patients for the development of HCC. This study suggests that serum AFP maybe the best way to do this.

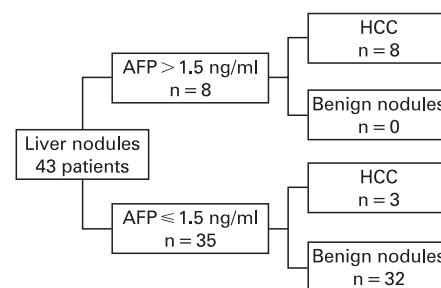
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Kaplan-Meier curve demonstrating the 6-week survival after acute variceal haemorrhage in cirrhotic patients stratified by model for end-stage liver disease (MELD) score ( $p < 0.0001$ ).



Transient elastography (TE) values according to fibrosis stage.



An  $\alpha$ -fetoprotein (AFP)  $>1.5$  ng/ml in a Budd-Chiari syndrome (BCS) patient with liver nodules predicts hepatocellular carcinoma (HCC) with a positive predictive value of 100% and a negative predictive value of 90%.