

linked to adverse events such as nephrotoxicity. Conventional ultrasound is of limited use in the diagnosis of acute pancreatitis, primarily because it cannot detect pancreatic necrosis effectively. Use of echo enhancement improves ultrasound imaging of organ perfusion; echo-enhanced ultrasound (EEUS) is less costly than CT, has fewer side effects, and can be used to diagnose acute pancreatitis. In this prospective study, Rickes *et al.* compared the diagnostic performance of EEUS and CT and the relationship between EEUS data and clinical parameters.

An experienced examiner who was blinded to prior laboratory and imaging findings performed conventional ultrasound, EEUS and CT scans of 31 patients (24 men) with acute pancreatitis, aged 19–67 years (mean 39 years), within 72 h after admission. A statistically significant correlation was found between the severity indices established for EEUS and for CT ($r=0.807$, $P<0.01$).

Discordance between diagnoses obtained by CT and EUS was observed for five patients (16%). EEUS correctly diagnosed all eight patients with pancreatic necrosis; however, it also produced two false-positive and four false-negative results in terms of severity. Rickes *et al.* question whether CT really is the best means of predicting acute pancreatitis, as none of the false-negative patients actually had severe pancreatitis, according to clinical criteria. Another potential issue is the large 95% confidence intervals, which were possibly due to the small sample size. The authors conclude that, nevertheless, EEUS has the potential to become a valid, first-choice alternative to CT for diagnosing acute pancreatitis.

Katherine Sole

Original article Rickes S *et al.* (2006) Echo enhanced ultrasound: a new valid initial imaging approach for severe acute pancreatitis. *Gut* 55: 74–78

Arterial ammonia levels as a predictor of mortality in acute liver failure

In patients with acute liver failure (ALF), the brain is exposed to high levels of ammonia, which has a neurotoxic effect. Researchers in India investigated the relationship between ammonia levels at admission and patient outcome by following 80 patients with ALF to either recovery or death.

The median arterial ammonia concentration at admission was 128.6 $\mu\text{mol/l}$. The median time from admission to death (42/80 patients) was 4 days. Median arterial ammonia concentration was significantly higher in patients who died (174.7 $\mu\text{mol/l}$) than in survivors (105.0 $\mu\text{mol/l}$, $P<0.001$). By regression analysis, an arterial ammonia level of $\geq 124 \mu\text{mol/l}$ was found to have a sensitivity of 78.6% and specificity of 76.3% as a predictor of death ($P<0.001$). Ammonia levels above this value had an odds ratio of 10.9 as a predictor of death (95% CI 5.9–284.0). Other factors found to be highly predictive of death were cerebral edema (odds ratio 12.6; 95% CI 1.5–108.5) and blood pH of 7.4 or below (odds ratio 6.6; 95% CI 0.8–57.5). These factors were incorporated into an equation predicting mortality risk, scoring risk factors as 0 if absent, or 1 if present: $z=2.53+2.91(\text{ammonia})+2.41(\text{edema})+1.40(\text{pH})$. The probability of death, P_x , could then be calculated as $P_x=1/(1+e^{-z})$, where e is the Euler number, approximating to 2.718.

The authors conclude that arterial ammonia levels are predictive of patient outcome and can be used for risk stratification, and that their results provide a rationale for the use of ammonia-lowering treatment in patients presenting with ALF.

Jim Casey

Original article Bhatia V *et al.* (2006) Predictive value of arterial ammonia for complications and outcome in acute liver failure. *Gut* 55: 98–104

Prevalence and treatment of *Clostridium difficile*-related disease

Clostridium difficile is a spore-forming, anaerobic bacillus. Infection with this organism can lead to toxin-mediated diarrhea and colitis, particularly for individuals in whom the balance of intestinal flora has been altered by antibiotic use. Prevalence of *C. difficile*-related disease is increasing, and has been the subject of several recent studies.

Independent research teams in the US and Canada have confirmed that a previously uncommon, highly virulent strain of *C. difficile* is increasing in prevalence. The so-called BI/NAP1 strain carries the binary toxin CDT (a suspected virulence factor) and a deletion in a regulatory gene (*tcdC*) that markedly