Artificial neural networks—a tool for assessing risk in patients with UGIH?

Most triage techniques used in patients with acute, nonvariceal, upper-gastrointestinal hemorrhage (UGIH) require urgent endoscopic evaluation, which might not always be possible. Das and colleagues evaluated the ability of an artificial neural network (ANN) to evaluate risk in patients with UGIH.

Data from 387 patients with acute, nonvariceal UGIH between January 1998 and June 1999 were prospectively collected. Data from half of these patients were used to train an ANN model of nonendoscopic triage, and the other half was used for internal validation of the model; external validation was then performed for 200 patients from a different center.

The best ANN model, which incorporated 27 input variables, had a sensitivity and specificity of 89% and 89%, respectively, for predicting the presence of major stigmata of recent hemorrhage, and 81% and 82%, respectively, for predicting the need for endoscopic therapy. In the external validation group, the sensitivity of the ANN model was >90% for predicting both main outcomes, but the specificity was decreased. Negative predictive values of the ANN model were superior to those of the clinical Rockall score in both validation groups, and were comparable to that of the complete Rockall score in the external validation group.

The authors conclude that nonendoscopic triage using the ANN model performed just as well as the endoscopic procedure, and should be considered for identifying patients with UGIH at low risk of adverse outcomes.

Original article Das A *et al.* (2008) Artificial neural network as a predictive instrument in patients with acute nonvariceal upper gastrointestinal hemorrhage. *Gastroenterology* **134:** 65–74

Two candidate genes for liver carcinogenesis identified in tree shrews and humans

Numerous genes have been identified that might contribute to the development of hepatocellular carcinoma (HCC); however, the genes most important in liver carcinogenesis are not yet known. Li and colleagues identified differentially expressed genes in an animal model of HCC, and compared these findings with those obtained in human HCC.

HCC was induced in tree shrews (*Tupaia belangeri chinensis*), which have a closer evolutionary relationship with humans than do other commonly used rodent species, by exposure to either aflatoxin B_1 (AFB_1) or HBV plus AFB_1. Biopsy samples of HCC tissue, HCC-surrounding tissue (para-HCC) and liver tissue before HCC onset (pre-HCC) were analyzed by cDNA microarray assay. This analysis highlighted 11 genes that showed altered expression patterns in both AFB_1-induced and AFB_1 + HBV-induced HCC. Two genes, *SOD1*, which encodes an antioxidant enzyme, and *GSTA1*, which encodes an apoptosis-associated protein, were downregulated in HCC tissue compared to para-HCC and pre-HCC tissue.

Reverse-transcriptase polymerase chain reaction and immunohistochemical assays showed that *SOD1* and *GSTA1* mRNA and protein levels were also significantly downregulated in human HCC samples, and levels of both proteins also inversely correlated with histopathological tumor grade (all $P<0.05$).

The authors conclude that *SOD1* and *GSTA1* seem to be differentially expressed in all cases of HCC regardless of etiology, and of the species in which HCC occurs. These genes should, therefore, be studied further as potential key mediators in liver carcinogenesis.

Original article Li Y *et al.* (2008) Candidate genes responsible for human hepatocellular carcinoma identified from differentially expressed genes in hepatocarcinogenesis of the tree shrew (*Tupaia belangeri chinensis*). *Hepatol Res* **38:** 85–95

Mechanical bowel preparation for colorectal surgery can be abandoned

Mechanical bowel preparation is currently used before colorectal surgery with the aim of preventing symptomatic anastomotic leakage, a potentially fatal complication of colorectal surgery. Although this strategy is thought to reduce fecal mass and bacterial count in the lumen, findings from several trials have suggested that this type of preparation does not actually reduce the risk of anastomotic leakage. Those studies, however, included few patients. Contant *et al*. devised a trial involving 1,431 patients to try to resolve this issue.