CD-related surgery. Antibodies to one or more microbial antigens were recorded in 73% of patients. The incidences of internal penetrating or stricturing disease and surgery increased as the number of microbial antigens and the magnitude of the immune response increased (P <0.0001 for trend). Patients who had antibodies to at least one of the antigens were significantly more likely to develop internal penetrating or stricturing disease or to undergo surgery than were those without such antibodies (P = 0.01 and P = 0.0001, respectively). Those patients who had antibodies to multiple types of microbial antigen developed complications at a significantly faster rate than those with antibodies to only one type of antigen, or those who were negative for all three types.

The authors concluded that immune responses to microbial antigens in pediatric patients with CD are associated with and can predict the development of CD-related complications.

Original article Dubinsky MC *et al.* (2008) Increased immune reactivity predicts aggressive complicating Crohn's disease in children. *Clin Gastroenterol Hepatol* **6:** 1105–1111

Liver transplantation increases risk of developing cancer

Transplantation and immunosuppression have been associated with an increased risk of cancer; however, few liver transplantation studies have compared cancer rates between transplant recipients and the general population. In a new study, Åberg *et al.* reveal that liver transplant recipients are almost three times more likely to develop cancer than the general population.

The team studied 540 Finnish liver transplant recipients (mean age 43 years, 296 females) who received transplants at the Helsinki University Central Hospital between 1982 and 2005, and compared the cohort with the national population register. During 3,222 person-years of follow-up, 39 post-transplant *de novo* cancers (found in 36 patients) were detected, the most common types being lymphoma (n = 9) and skin cancer (n = 11). Transplant recipients had a standardized incidence ratio for all cancers of 2.59 (95% CI 1.84–3.53) in comparison with the general population; this ratio was markedly elevated for non-Hodgkin lymphoma and nonmelanoma skin cancer 13.9 (95% CI 6.01–27.4) and 38.5 (95% CI 18.5–70.8), respectively. Risk of non-Hodgkin lymphoma was increased in the immediate post-transplant period in male patients and in young transplant recipients. Cases of nonmelanoma skin cancer occurred most frequently in patients who had received antibody induction therapy and older patients.

Åberg and colleagues estimate that one in six liver transplant patients are likely to develop cancer within the 20 years following transplantation. These results highlight the value of post-transplant cancer surveillance, and the importance of developing immunosupressive therapies that might reduce the risk of cancer.

Original article Åberg F *et al.* (2008) Risk of malignant neoplasms after liver transplantation: a population-based study. *Liver Transpl* **14:** 1428–1436

New gene-expression profiles to predict outcome in hepatocellular carcinoma

Current histopathological and anatomical methods of predicting outcome in early hepatocellular carcinoma (HCC) are not particularly effective in early disease. Hoshida *et al.* undertook genome-wide expression profiling in patients with early HCC to discover and validate gene-expression signatures associated with outcome.

The authors profiled 6,100 genes in a training set that comprised formalin-fixed, paraffin-embedded samples of tumor tissue and tumor-adjacent tissue from 106 consecutive patients with surgically resected, primary HCC. A validation set of samples from 234 consecutive patients with resected HCC was used to confirm the gene-expression profiles associated with disease-specific survival and time to recurrence.

The researchers did not find any gene-expression pattern that significantly correlated with recurrence or survival after profiling 80 of the training-set tumor samples. When 82 samples of tissue from around the resected tumor were profiled, however, a 186-gene signature that correlated with survival and a 132-gene signature that correlated with late recurrence (i.e. recurrence more than 2 years after resection) were discovered. Both signatures remained associated with their respective