

at intermediate and high doses. The mean relative reduction in the volume of small bowel irradiated was $37.8\% \pm 32.8\%$.

At the 50% dose level, the volume of small bowel irradiated varied significantly according to age, sex, body weight and BMI (in the range 20–25 kg/m²); however, additional studies are needed to evaluate this finding further.

The authors acknowledge that by comparing treatment plans, rather than actual treatments, clinical outcomes could not be investigated. Nonetheless, they believe that by reducing the volume of small bowel irradiated, IMRT plus a belly board could reduce small-bowel complications during preoperative radiotherapy for rectal cancer.

Original article Kim JY *et al.* (2007) Intensity-modulated radiotherapy with a belly board for rectal cancer. *Int J Colorectal Dis* 22: 373–379

First steps towards stem-cell treatment of Hirschsprung's disease

Patients with Hirschsprung's disease have distal-bowel aganglionosis, caused by incomplete colonization of the embryonic gut by neural crest cells. Autologous transplantation of multipotent, self-renewing, enteric nervous system progenitor cells (ENSPCs) has been suggested as a potentially curative therapy for such patients, but work in this field is still in the preclinical stage.

Almond and colleagues have described a method that can be used to isolate ENSPCs from either embryonic mouse or postnatal human gut tissue. Briefly, mouse embryonic ceca and ganglionic bowel samples from three human patients (age range 3 weeks to 7 months) with Hirschsprung's disease, imperforate anus and colonic atresia, respectively, were dissociated and cultured. Mesenchymal cells adhered to the culture vessel and were discarded, but neural-crest-derived cells (<5% of the total) remained in suspension and proliferated to form neurospheres. These neurospheres contained neuronal and glial cells with various phenotypes, as well as multipotent ENSPCs. Mouse or human neurospheres cultured for ≥ 21 days could colonize explanted mouse-embryo aganglionic distal hindguts. Colonization of the entire explant with neurosphere-derived neuronal and glial cells took ~8 days.

Although this study shows that isolating autologous ENSPCs from human ganglionic bowel soon after birth is feasible, Almond and colleagues note that future studies need to demonstrate that cultured neurospheres can colonize the postnatal bowel, a very different environment to embryonic gut. The functionality of ENSPC-derived neurons must be characterized, and the safety of their transplantation (in terms of neoplasm) needs to be assured before human trials take place.

Original article Almond S *et al.* (2007) Characterisation and transplantation of enteric nervous system progenitor cells. *Gut* 56: 489–496

Perfusion measurements differentiate between diverticulitis and colon cancer

Considerable overlap between CT-detectable morphologic features of diverticulitis and colon cancer makes their differential diagnosis difficult, but perfusion measurements obtained with dynamic contrast-enhanced CT might assist discrimination between these conditions. Goh and colleagues performed a prospective study to determine whether CT perfusion imaging assists this diagnosis, and to compare CT-perfusion-based assessments with those based on morphologic diagnostic criteria.

Goh and colleagues enrolled 60 consecutive patients (mean age 69 years) initially diagnosed with colon cancer ($n=20$), diverticulitis ($n=20$), or inactive diverticular disease ($n=20$) who all underwent perfusion contrast-enhanced CT scans, followed by standard abdominopelvic CT scans. All patients were followed up for 1 year after initial presentation to confirm diagnosis.

Blood volume, blood flow, transit time (time taken for contrast material to travel through the tumor or diverticular vasculature) and intratumoral vascular permeability values were highest in patients with established cancer, and lowest in those with inactive diverticular disease. A blood volume of >6.7 ml/100 g tissue was only observed in cancer patients. Permeability was the best parameter to distinguish between patients with and without cancer. The best morphologic features to discriminate cancer from diverticulitis were localized mass and pericolonic abscess. Overall, the strongest discriminators between cancer