surgical procedure is being contemplated. Computed tomography guided biopsy has been used for more than 20 years and has proved to be a safe and reliable procedure with good sensitivity. It is, however, associated with the risk of peritoneal and cutaneous seeding of the cancer, a complication avoided by endoscopic ultrasound guided biopsy. With greater availability, an attempt should be made to obtain preoperative endoscopic ultrasound guided fine needle aspirates or trucut biopsies in all patients with pancreatic cancer.

Laparoscopy or laparotomy

If the findings of imaging are inconclusive, a staging laparoscopy or laparotomy may be done before definitive surgery. Laparoscopy and laparotomy can be combined with intraoperative ultrasonography to define pancreatic lesions and to exclude suble liver metastases that may have been missed by other imaging modalities. However, routine laparoscopy is not currently recommended as it influences the management in less than 14% of patients with pancreatic cancer.

Staging

Pancreatic cancers are staged using the TNM (tumour, node, metastasis) classification. Accurate staging has a vital role in the management of pancreatic tumours now that non-operative palliative options are available. Computed tomography is widely used in the preoperative staging of pancreatic neoplasms. With recent advances in magnetic resonance imaging and endoscopic ultrasonography, the accuracy of preoperative staging has improved, especially with respect to local invasion and regional node involvement.

Conclusions

Several imaging modalities are available to the clinician to diagnose and stage pancreatic cancer, and figure 4 suggests a treatment algorithm. When diagnostic techniques are combined appropriately, the rate of unnecessary surgical explorations can be reduced. Studies comparing the various imaging modalities used in the diagnosis of pancreatic cancer have shown that it is difficult to diagnose on the basis of computed tomography alone. Further examinations or biopsy are often needed to confirm the diagnosis. Although computed tomography is the imaging modality of choice at present, endoscopic ultrasonography and positron emission tomography are likely to become vital in the detection of small tumours. In general, endoscopic retrograde cholangiopancreatography should be reserved for treatment in patients who are found to have unresectable or metastatic disease. Despite the rapid advances in imaging techniques, the overall impact of these modalities on the survival of patients with pancreatic cancer is debatable as most patients still present with locally advanced disease. A need thus exists for the development of biomarkers and techniques for the early diagnosis of the disease in symptomatic patients as well as for use in screening tests in symptom-free people at risk of developing pancreatic carcinoma. The table summarises the recent and ongoing clinical trials in pancreatic cancer.

We thank Guruprasad P Aithal, consultant hepatologist, University Hospital, Queen’s Medical Centre, Nottingham, for providing the images for figure 3.

Contributors: AST and PP reviewed the literature and prepared the initial and final drafts of the manuscript. RD reviewed the imaging aspects of the paper and was involved in writing the final draft. DNL reviewed the manuscript and provided intellectual input and overall supervision, in addition to preparing the figures. AST and DNL are guarantors.

Funding: None.

Competing interests: None declared.


(Accepted 15 July 2004)

Corrections and clarifications

Spinal immobilisation for unconscious patients with multiple injuries

One keystroke occluded the identity of the second author of this clinical review by C G Morris and colleagues (28 August, p 495), leading to Eamon Paul McCoy being listed as W McCoy. The correct designation of the authors is C G Morris, E McCoy, G G Lavery.