Triple phase pancreatic MDCT scanning- Pros and Pitfalls

INTRODUCTION

Pancreatic cancer is the 4th most frequent cause of cancer related death. Despite advances in MRI and EUS, multidetector CT (MDCT) is still the mainstay of imaging. Most patients present late and surgical intervention is often for the few who present early and still carries significant morbidity, and 5% mortality with the procedure.

IMAGING TECHNIQUE

Enhanced dynamic CT is good in the diagnosis and staging of pancreatic tumours. A dedicated pancreatic protocol has been established using unenhanced data, 30 s after contrast administration to show intraglandular extent and demonstrate vascular compromise. Lesions can be solid or cystic and MDCT offers increased resolution in visualising vessels and tumour morphology.

A further scan at 90 s is done to cover the remainder of the liver and abdomen to exclude metastasis. The characteristics established on a dynamic MDCT are:

1. Primary tumour characteristics - size, site, cystic or solid
2. Ancillary pancreatic biliary findings
3. Evidence of extra pancreatic extension, ie to vessels
4. Lymphadenopathy and distant metastasis - then conclude on resectability.

Cystic lesions on CT are easily detected. Malignant lesions can be unilocular but are mainly multiloculated, with cysts which are usually less than 2 cm in diameter with papillary projections and calcification.

Pitfalls have been documented where MCN (mucous cystic neoplasms) have been misdiagnosed as pseudocysts. MRI helps with the solid components.

Pitfalls for intraductal papillary neoplasms is a misinterpretation of chronic focal pancreatitis. The same can occur for benign lesions such as pseudocysts and chronic focal pancreatitis being misinterpreted at carcinoma.

Solid pancreatic lesion is usually a hypo attenuating mass in the enhancing normal parenchyma.

As with most pathology, the availability of adjunct imaging is a plus. MRI in some cases is probably similar to CT in terms of diagnostic efficacy. It is of value in patients with renal failure and iodine allergy. There is also better soft tissue contrast although CT has better spatial resolution for vessel because of short time for acquisition.

PET imaging with F-18 labelled fluorodeoxyglucose has a high sensitivity in detecting pancreatic carcinoma as benign lesions shows a lower Standardised uptake value.

Endoscopic ultrasound has its role. It is a sensitive technique but remains confined to specialist centres. It allows for more accurate examination of local invasion as well as tissue sampling. In some studies it has shown that endoscopic ultrasound can even upstage the tumour and be more sensitive than CT.

CONCLUSION

Whether pancreatic tumours are discovered via dedicated imaging on clinical suspicion or as an incidental finding on routine portal venous scanning, it requires a high level of vigilance in interrogating the pancreas for malignancy. Patient factors such as lack of fat planes can hinder interpretation, however low risk additional tests are available (MRI and EUS) and should be pursued.

References:
4. Contribution of imaging from Dr Y Kidston (Consultant Radiologist from University Hospital of South Manchester)