This audit resulted in us seeing screening time staying roughly the same, and image quality remaining very high, yet resulted in a dramatic decrease in average patient aquired dose.

Relevance / Impact - As E.R.C.P. procedures are a common procedure undergone by many patients, by reducing dose, and performing the procedure in as few sessions as possible, this can only be of benefit to the patients.

Outcomes - The January audit showed a decrease in screening time of 16%, with an increase in dose of 21%.

The re-audit gave the results of screening time increasing by just 1%, yet average patient aquired dose decreasing by 41% as a result of the methods introduced. Diagnostic image quality remained unchanged.

Discussion - Although dose has been dramatically reduced, I believe that it is possible to reduce it further, without affecting the quality of the imaging, or the care or treatment that the patient will recieve.

Computer assisted detection/diagnosis and image perception

P-151   Triple phase pancreatic MDCT scanning- pros and pitfalls

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Key Learning Objectives. Awareness of the advantages of   triple phase pancreatic scanning for lesions but an increased awareness that increased sensitivity for small tumors requires adjunct imaging.

Description. Triple phase MDCT   is used for evaluating pancreatic lesions since it increases the sensitivity and specificity of lesion identification. However, in a collection of cases presenting with pancreatic lesions, the triple phase pancreatic scans were reviewed. A number of lesions were difficult to detect even despite the triple phase CT and subsequently required adjunct imaging such as MRI or endoscopic ultrasound for lesion identification. This impacts on the patient outcome if early treatment is instigated.

Conclusion. Triple phase CT has been quoted to have sensitivity of around 80% in the literature,but clinicians need to pursue non detection with additional tests in patients where malignancy is strongly suspected..

P-152   Low-dose versus high-dose CT acquisition on a PET/CT system for lesion detection: a free-response receiver operating characteristic study

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Aim: To determine whether significant differences in lesion detection performance exist between a diagnostic quality CT (DQCT) acquisition and a CT attenuation correction (CTAC) acquisition within an anthropomorphic chest phantom.

Method: An anthropomorphic chest phantom containing a range of sizes and densities of simulated lesions was scanned on the GE Discovery VCT 64 slice PET/CT using low (42mA, 0.5s rotation) and diagnostic quality (293mA, 0.5s rotation) CT acquisition protocols. No phantom movement occurred between acquisitions to ensure that lesion positions remained the same on each set of images. Scanning produced 184 cases (47 abnormal cases containing 59 lesions; 45 normal cases), these were evaluated by 10 observers using ROCView. A free-response receiver operating characteristic method was used, this allowed observers to localise and score multiple decision sites. Decision sites were classified using an acceptance radius. The jackknife alternative free-response receiver operating characteristic (JAFROC) figure of merit (FOM) was used for significance testing. A difference would be considered significant at $p<0.05$.

Results: A significant difference in lesion detection was seen (p = 0.01) in favour of the DQCT acquisition. The JAFROC FOM for the CTAC and DQCT acquisitions were 0.781 and 0.848 respectively.

Conclusion: For accurate lesion detection in an anthropomorphic chest phantom there is a diagnostic advantage in using a high-dose CT acquisition. Further work would evaluate the potential for optimisation of this high-dose acquisition. Questions are also raised over the value of acquiring an attenuation map at 42mA, if this could be provided by a much lower dose acquisition.

P-153   Adaptive iterative dose reduction versus filtered back projection for lesion detection: a free-response receiver operating characteristic study

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Aim: This comparative analysis examines lesion detection within an anthropomorphic chest phantom for adaptive iterative dose reduction (AIDR) reconstruction and filtered back projection (FBP).

Method: An anthropomorphic chest phantom containing a range of sizes and densities of simulated lesions was scanned on the Toshiba Aquilion ONE 320-slice CT system. The phantom was scanned on 20, 40, 60 and 80mA and reconstructed using either FBP or AIDR. No phantom movement occurred between acquisitions to ensure that lesion positions remained constant. Scanning produced 68 cases (34 abnormal containing 46 lesions; 34 normal). 11 observers using ROCView evaluated images. A free-response receiver operating characteristic method allowed observers to localise and score multiple decision sites. Decision sites were classified using an acceptance radius. The jackknife alternative free-response receiver operating characteristic (JAFROC) figure of merit (FOM) was used for significance testing. A difference would be considered significant at p<0.05.

Results: A significant difference in lesion detection was seen (p = 0.0005). The JAFROC FOMs suggest that lesion detection performance was improved above 20mA. No significant difference in lesion detection performance was seen between FBP and AIDR at any specific mA level.

Conclusion: Lesion detection performance can be maintained at a statistically equal level above 20mA within an anthropomorphic chest phantom. It is interesting to note that, despite improved signal to noise ratio, AIDR did not offer a statistically significant improvement in lesion detection. Further work would investigate the value of AIDR when optimising the image between 20mA and 40mA.

P-154   The impact of pre-operative MRI in breast cancer in a Northern Irish Centre

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Objectives: Retrospective case based review of patients with breast cancer to assess the benefit of breast MRI over other imaging modalities in Antrim Area Hospital in 2011.

Content: Cancer sizing (mm) was documented for MRI and ultrasound, with mammography findings noted and actual size documented from final pathology. Upgrade classified as lesion sized correctly on MRI but not on other imaging as greater than 35mm, therefore potentially requiring mastectomy.

Relevance: MRI is more sensitive than conventional imaging in staging breast cancer with a correct change of treatment in 12-32% of patients. The multi-central COMICE trial failed to show that the addition of MRI to conventional triple assessment was associated with a reduced re-operation rate. Our study looked at the accuracy and impact of breast MRI in a single centre when undertaken by a group of expert radiologists.

Results: 40 consecutive breast cancer staging MRI examinations took place in 2011. 19/40 (47.5%) had lobular carcinoma. Patients undergoing standard triple assessment had a re-operation rate of 15.5%, compared with 7.5% in patients undergoing MRI pre-operatively. MRI correctly upgraded 12/40 (30%) breast cancers, 7/19 (36.8%) in lobular cancer. 55.3% of lesions were within 20% of actual size on MRI compared within 29.4% on US (p=0.034).

Conclusion: MRI in this study reduced re-operation, upgraded 30% of patients to mastectomy and was significantly more accurate at sizing lesions than US. We conclude MRI is of value in routinely imaging breast cancer prior to surgery.