The CT and MRI scout views: don't forget to look!

Poster No.: C-2433  
Congress: ECR 2017  
Type: Educational Exhibit  
Authors: Y. Wu, C. N. Tentugal; Bury St Edmunds/UK  
Keywords: Professional issues, Thorax, Abdomen, CT, MR, Education, Education and training  
DOI: 10.1594/ecr2017/C-2433

Any information contained in this pdf file is automatically generated from digital material submitted to EPOS by third parties in the form of scientific presentations. References to any names, marks, products, or services of third parties or hypertext links to third-party sites or information are provided solely as a convenience to you and do not in any way constitute or imply ECR's endorsement, sponsorship or recommendation of the third party, information, product or service. ECR is not responsible for the content of these pages and does not make any representations regarding the content or accuracy of material in this file.

As per copyright regulations, any unauthorised use of the material or parts thereof as well as commercial reproduction or multiple distribution by any traditional or electronically based reproduction/publication method ist strictly prohibited.

You agree to defend, indemnify, and hold ECR harmless from and against any and all claims, damages, costs, and expenses, including attorneys' fees, arising from or related to your use of these pages.

Please note: Links to movies, ppt slideshows and any other multimedia files are not available in the pdf version of presentations.

www.myESR.org
Learning objectives

To illustrate various significant findings displayed on the scout views of CT and MRI exams.

To demonstrate the importance of routine inspection of the scout images.
Background

Scout views are low-resolution radiographic images which are routinely performed for localizing a CT or MRI exam.

They are frequently overlooked by the reporting Radiologist, however, scout views can present significant pathological findings which may or may not be included in the field of view (FOV) of the study.
Findings and procedure details

We present multiple cases which demonstrate significant findings on the scout images, many of which are not included in the FOV of the CT or MRI exam.

Case 1: (Fig. 1) a 37-year-old female, presented with shortness of breath on exertion for 8 days and a CT pulmonary angiogram was performed. On the scout view, gallstones were visualised (arrow) which had not been included in the cross-sectional images.

Case 2: (Fig. 2) an 88-year-old male, presented with a 6-month history of malaise, anaemia and weight loss. Originally a CT abdomen and pelvis was requested. On the scout view, a large right mid zone lung mass was seen (arrow) and therefore scan was changed to CT chest abdomen and pelvis, which confirmed a large lung mass in the mid zone adjacent to the right hilum (arrow). The final diagnosis was metastatic primary lung cancer.

Case 3: (Fig. 3) a 46-year-old female, involved in a road traffic accident with fainting episodes. On the scout view of CT head and cervical spine, an old fracture of the proximal right humeral shaft was visualised, which was not included in the cross-sectional images.

Case 4: (Fig. 4) a 70-year-old male, presented with a progressive walking difficulty and low back pain and MRI lumbar spine was performed. An incidental abdominal aorta aneurysm of 5.8 cm was noted on the scout view, which was difficult to detect on the other images due to the saturation band. Patient has been referred to the vascular team for further follow-up and treatment.

Case 5: (Fig. 5) a 62-year-old female with bilateral sciatica in an L5 distribution and MRI lumbar spine was performed. A significant liver mass was seen on the scout view (arrow). Subsequent analysis with a dedicated CT-liver exam showed a corresponding mass of 6 cm with typical features of a hemangioma (arrow). Adjacent small liver cyst also noted (circle).

Case 6: a (Fig. 6) a 74-year-old male presented with a few weeks of altered sensation and peripheral neuropathy up to mid thigh. The scout view of the MRI spine showed a large para-aortic mass in the abdomen as an incidental finding (arrow). Further, CT chest abdomen and pelvis exam confirmed the para-aortic mass (arrow) and CT-guided biopsy of the mass showed lymph node metastasis from testicular seminoma.
Case 7: (Fig. 7) a 73-year-old female presented with raised inflammatory markers, and pain and tenderness at C2-C4. On the scout view of the MRI cervical spine, there was an incidental lung mass in the upper zone of the right lung detected. Further analysis with CT chest-abdomen-pelvis showed a corresponding lung tumour in the right upper lobe. The final diagnosis was an early stage lung cancer.

Case 8: (Fig. 8) a 90-year-old female with left side sciatica in L5 distribution. On the scout view of the MRI lumbar spine, there is a large paraspinal thoracic mass on the right side. Further analysis with CT chest showed a large hernia hiatus corresponding to the paraspinal mass seen on the MRI scout view.

Case 9: (Fig. 9) a 72-year-old male with biopsy proven prostate cancer came for MRI prostate for loco-regional staging. On the scout view, a heterogeneous mass arising from the left kidney was visualised (arrow). Subsequently, CT abdomen-pelvis confirmed a hypervascular mass of 5 cm from the left kidney (arrow), highly suspicious of renal cell cancer (arrow). Left nephrectomy was performed and the mass was pathologically proven to be a renal cell cancer.

Case 10: (Fig. 10) a 48-year-old female complaining of sensational disturbances. MRI brain and MRI spine were performed. On the scout view of the MRI spine, a large right ovarian mass was identified. The patient is lost to follow-up.

Case 11: (Fig. 11) a 69-year-old female presented with left buttock and posterior thigh and calf pain. On the scout view of the MRI lumbar spine, there was a markedly distended endometrial cavity (arrow). Further analysis with ultrasound exam demonstrated that the endometrial cavity was very distended and filled with homogeneous hypoechoic material. Subsequently, the hysteroscopy showed a pus-filled endometrial cavity and endometritis.

Case 12: (Fig. 12) a 68-year-old male presented with back pain and right side sciatic pain. On the MRI exam of the thoracic and lumbar spine, there is a right sacral mass with bone destruction seen (arrow) and an adjacent smaller bone lesion also noted (arrow). On the MRI scout view, a lung mass on the right upper lobe was detected(arrow). The combination of the sacral mass and suspicious lung mass made a metastatic primary lung cancer most likely. Subsequently, CT chest-abdomen exam confirmed the lung tumour in the right upper lobe. Further, a biopsy of the sacral mass proved to be a bone metastasis from primary lung cancer.

Case 13: (Fig. 13) a 72-year-old female attended MRI cervical spine because of neck pain and radiating arm pain. On the scout view, an incidental lung nodule was detected. The final diagnosis was lung metastasis from oesophageal cancer.
Case 14: (Fig. 14) an 82-year-old male presented with shortness of breath and productive cough. CT chest demonstrated a peripheral consolidation in the right upper lobe (arrow), probably pneumonia, which could be seen in the scout view, therefore chest x-ray could be used for following up. Indeed the chest x-ray obtained 6 weeks following the CT showed a complete resolution of the consolidation.

Case 15: (Fig. 15) a 60-year-old female presented with possible right sided L4 radiculopathy. On the scout coronal view of the MRI lumbar spine, a s-shaped thoracolumbar scoliosis was clearly demonstrated. Generally speaking, on axial images, the degree of scoliosis is sometimes difficult to evaluate.

Case 16: (Fig. 16 and Fig. 17) a 46-year-old female with low back pain attended MRI lumbar spine exam. On the scout view, a significantly enlarged uterus was seen, possibly representing a fibroid uterus (Fig 16, arrow). Further analysis with ultrasound confirmed the diagnosis of a fibroid uterus (Fig 17, arrow points to a large fibroid).

Case 17: (Fig. 18 and Fig 19) a 71-year-old male presented with urinary symptoms and increased PSA level. MRI prostate was performed. On the scout view, a multicystic lesion was noted in the pancreas head/uncinate process with a marked dilatation of the main pancreatic duct, consistent with mixed main and side-branch IPMN. Subsequently, MRI pancreas with MRCP was performed which confirmed this diagnosis and there was no worrisome features demonstrated (see fig. 18 MRCP image). Follow up MRI pancreas every 6 months was advised by the multidiscipline team.
**Fig. 1:** On the scout view of CT pulmonary angiogram gallstones were visualised which had not been included in the cross-sectional images.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
**Fig. 2:** Originally a CT abdomen and pelvis was requested. On the scout view a large right mid zone lung mass was seen (arrow) and therefore scan was changed to CT chest-abdomen and pelvis, which confirmed a large lung tumour in the mid zone adjacent to the right hilum (arrow).

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
**Fig. 3:** On the scout view of CT brain and cervical spine an old fracture of the proximal right humeral shaft was visualised, which was not included in the cross-sectional images.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
**Fig. 4:** An incidental abdominal aorta aneurysm of 5.8 cm is seen on the scout view (arrow), which was difficult to detect on the other images due to the saturation band.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
Fig. 5: A significant liver mass was seen on the scout view (arrow). Subsequent analysis with a dedicated CT-liver exam has shown a corresponding mass of 6 cm with typical features of a hemangioma (arrow). Adjacent small liver cyst also noted (circle).

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
Fig. 7: On the scout view of the MRI cervical spine there was a incidental lung mass in the upper zone of the right lung detected. Further analysis with CT chest-abdomen showed a corresponding lung tumour on the right upper lobe. Final diagnosis was an early stage primary lung cancer.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
**Fig. 8:** On the scout view of the MRI lumbar spine there is a large para-spinal thoracic mass on the right side. Further analysis with CT chest showed a large hernia hiatus corresponding to the para-spinal mass seen on the MRI scout view.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK

**Fig. 18:** On the scout view a multi-cystic lesion was noted in the pancreas head/uncinate process with a marked dilatation of the main pancreatic duct, consistent with mixed main and side-branch IPMN.
Fig. 9: On the scout view a heterogeneous mass arising from the left kidney was visualised (arrow). Subsequently, CT abdomen-pelvis confirmed a hyper-vascular mass of 5 cm from the left kidney (arrow), highly suspicious of renal cell cancer.
Fig. 10: On the scout view of MRI spine an incidental large right adnexal/ovarian mass was identified which was not included in the other series.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
Fig. 11: On the scout view of the MRI lumbar spine there was a markedly distended endometrial cavity. Further analysis with ultrasound exam demonstrated a distended endometrial cavity filled with homogenous hypo-echoic material.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
**Fig. 13:** On the scout view a incidental lung nodule was detected. Final diagnosis was lung metastasis from esophageal cancer.

© Radiology department, West Suffolk Hosptial - Bury St Edmunds/UK
Fig. 14: A peripheral consolidation in the right upper lobe, probably pneumonia, which could be seen in the scout view, therefore chest x-ray could be used for following up. Indeed the chest x-ray obtained 6 weeks following the CT showed a complete resolution of the consolidation.

© Radiology department, West Suffolk Hosptial - Bury St Edmunds/UK
**Fig. 15:** On the scout coronal view of the MRI lumbar spine a s-shaped thoracolumbar scoliosis was clearly demonstrated.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
Fig. 16: On the scout view a significantly enlarged uterus was seen, possibly representing fibroid uterus

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
Fig. 6: The scout view of the MRI spine showed a large para-aortic mass in the abdomen as an incidental finding (arrow). Further CT chest-abdomen exam confirmed the para-aortic mass (arrow) and CT guided biopsy of the mass showed lymph node metastasis from testicular seminoma.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
**Fig. 19:** Further MRI pancreas and MRCP confirmed a multi-cystic lesion in the pancreas head/uncinate process with a marked dilatation of the main pancreatic duct.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
Fig. 12: On the MRI exam of the thoracic and lumbar spine there is right sacral mass with bone destruction (right upper image, arrow). On the MRI scout view a lung mass on the right upper lobe was detected (left image, arrow). Subsequently, CT chest was performed and confirmed the lung tumour in the right upper lobe. The combination of the sacral mass and suspicious lung mass made a metastatic primary lung cancer most likely.

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
Fig. 17: Further analysis with ultrasound confirmed the diagnosis of a fibroid uterus (Fig 17, arrow points to a large fibroid).

© Radiology department, West Suffolk Hospital - Bury St Edmunds/UK
Conclusion

Scout views are an indispensable part of any CT and MRI examination. Radiologists should carefully review the scout images in order to detect potential significant findings that may or may not be included in the FOV of the study. A missed finding on scout views may lead to a delay in patient's management and may have medico-legal implications.
References


5. ECR 2010

Survey the scout: Importance of survey images in spinal MR scans

T. G. Kulkarni, K. Das; Liverpool/UK