PJR April - June 2017; 27(2): 172-175

Commentary

Literature highlights have returned after a hiatus. We have a selection of 5 abstracts for your perusal .

One of the recurring challenges in oncological imaging is post treatment evaluation and surveillance of head and neck cancers. The complexity of the regional anatomy and the effects of the treatments combine to make this a particularly difficult situation. Various modalities have been applied to this problems but all have their limitations. Vaid et al report the use of Diffusion Weighted Imaging for this this applications. They find that ADC is a useful adjunct measurement. Whatever modality is applied it is important that readers are fully aware of the consequences of the different treatment interventions, especially the surgical resections and reconstructions.

Heerink et al in their meta-analysis reiterate that percutaneous lung biopsies are generally safe. Although the minor complications were relatively common the serious complications were rare. They list the factors that are associated with an increase in complications.

Rosenkrantz looks at the way radiologists communicate incidental findings to the patients and the referring physicians. He finds that how radiologists describe clearly benign findings are commonly misinterpreted both by the referring physicians and the patients leading to anxiety and unnecessary additional investigations. In a country like Pakistan where the patients have considerably more access to the radiology reports than the west this is of an even greater concern. One phrase that stood out as creating the greatest amount of anxiety was “cannot be excluded”. (e.g. “most likely benign cyst however tumour cannot be excluded”). Radiologist regularly use this term and it seems that often it is not because there is a degree of uncertainty regarding the nature of the lesion but rather the radiologist is trying to protect him/herself from future recriminations. The role of the radiologist is to clarify and categorise imaging findings. We should not be adding an additional layer of uncertainty. Clearly benign findings should be labelled as such.

Chong Hyun Suh et al present a meta-analysis of shear wave data regarding cervical lymph nodes. They find high degrees of sensitivity and specificity for this technique in characterising benign and malignant nodes. As importantly they find that the technique (ARFI Vs SSI) did not have a significant impact. The various manufacturers are pushing their own technology with claims of superiority. This meta-analysis belays their claims.

A few years ago the, based on a small data set reported in a prestigious journal, Multiple Sclerosis community was very excited as it seemed that the true pathophysiology of MS and its treatment had been discovered. Craniocervical venous anomalies were the culprit and their correction will cure the disese. Alas like many other promising hypothesis this has not withstood the more rigorous scientific scrutiny. After countless unnecessary venoplasties and stentings (some of which went horribly wrong) the neurological world has accepted that this hypothesis is not correct. Torres et al reiterate this in their paper where they look at the venous anomalies and find that they occur with equal frequency in MS sufferers and non sufferers.

Prof. Zafar Sajjad
Professor of Radiology
Aga Khan University Hospital, Karachi, Pakistan.

Clinical Radiology 2017; 72(1): 74-83

S. Vaid, A. Chandorkar, A. Atre, D. Shah and N. Vaid

Differentiating recurrent tumours from post-treatment changes in head and neck cancers: does diffusion-weighted MRI solve the eternal dilemma?

AIM: To evaluate the utility of diffusion-weighted imaging (DWI) in differentiating post-treatment changes from tumour recurrence in head and neck cancers and to establish a threshold apparent diffusion coefficient (ADC) value to differentiate the two conditions.

MATERIALS AND METHODS: This was a prospective study of 80 treated head and neck cancer patients. The patient cohort consisted of a wide spectrum of head and neck sites, including the oral cavity, oropharynx, larynx, hypopharynx, paranasal sinuses, orbits, salivary glands, and infra-temporal fossa. Qualitative analysis of the diffusion images and quantitative analysis of the corresponding ADC maps was performed and the data were correlated with histopathological findings and clinical examinations.

RESULTS: The mean ADC value of recurrent tumours in the present cohort was 0. 932 ± 0.19×10-3 mm 2/s and the mean ADC value of lesions representing post-treatment changes was 1.394 ± 0.32×10-3 mm 2/s. A threshold ADC value of 1.2×10-3 mm 2/s used to differentiate post-treatment changes from recurrent head and neck cancers showed the highest combined sensitivity of 90.13%, specificity of 82.5%, accuracy of 86.4%, positive predictive value of 84.4%, negative predictive value of 88.9%, and mean kappa measurement of agreement of 72.8.

CONCLUSION: Combined qualitative and quantitative analysis of DWI is a useful non-invasive technique to differentiate recurrent head and neck malignancies from post-treatment changes using a threshold ADC value.

European Radiology 2017; 27(1): 138-48

W. J. Heerink, G. H. de Bock, G. J. de Jonge, H. J. M. Groen, R. Vliegenthart, M. Oudkerk

Complication rates of CT-guided transthoracic lung biopsy: meta-analysis

OBJECTIVES: To meta-analyze complication rate in computed tomography (CT)-guided transthoracic lung biopsy and associated risk factors.

METHODS: Four databases were searched from 1/2000 to 8/2015 for studies reporting complications in CT-guided lung biopsy. Overall and major complication rates were pooled and compared between core biopsy and fine needle aspiration (FNA) using the random-effects model. Risk factors for complications in core biopsy and FNA were identified in meta-regression analysis.

RESULTS: For core biopsy, 32 articles (8,133 procedures) were included and for FNA, 17 (4,620 procedures). Pooled overall complication rates for core biopsy and FNA were 38.8 % (95 % CI: 34.3–43.5 %) and 24.0 % (95 % CI: 18.2 - 30.8 %), respectively. Major complication rates were 5.7 % (95 % CI: 4.4–7.4 %) and 4.4 % (95 % CI: 2.7–7.0 %), respectively. Overall complication rate was higher for core biopsy compared to FNA (p<0.001). For FNA, larger needle diameter was a risk factor for overall complications, and increased traversed lung parenchyma and smaller lesion size were risk factors for major complications. For core biopsy, no significant risk factors were identified.

CONCLUSIONS: In CT-guided lung biopsy, minor complications were common and occurred more often in core biopsy than FNA. Major complication rate was low. For FNA, smaller nodule diameter, larger needle diameter and increased traversed lung parenchyma were risk factors for complications.

American Journal of Roentgenology 2017; 208: 140-3

Andrew B. Rosenkrantz

Differences in Perceptions Among Radiologists, Referring Physicians, and Patients Regarding Language for Incidental Findings Reporting

OBJECTIVE: The purpose of this article is to compare radiologist's, referring physician's, and patient's interpretations of expressions within radiology reports to describe findings of likely low clinical significance.

SUBJECTS AND METHODS: Surveys were completed by abdominal radiologists (n = 13), physicians referring patients for abdominal CT (n = 59), and outpatients awaiting imaging (n = 51) at a large urban academic medical center. Surveys presented 10 expressions for describing an incidental 5-mm liver lesion and asked respondents to select from a list of choices their perceived likelihood that the lesion represented malignancy. Radiologists and referrers were asked supplemental questions.

RESULTS: Compared with radiologist's concern, referrer's and patient's concerns were higher for four and seven of the 10 expressions. Only the expression "benign cyst" was associated with no concern in all groups; "most likely a cyst" and "too small to characterize" were associated with median levels of concern of 0% for radiologists, > 0% to 1% for referrers, and > 2% to 5% for patients. Expressions containing the phrase "not excluded" had the highest concern in all groups. Referrers' likelihood of ordering follow-up imaging varied widely for the expressions (e.g., "benign cyst," 2%; "cyst," 22%; "most likely a cyst," 46%; "most likely a cyst, although tumor not excluded," 75%). Overall, the preferred phrase for a 5-mm liver lesion with benign features in normal-risk patients was "cyst" among radiologists and "benign cyst" among referrers. Seventy-six percent of referring physicians thought that radiology reports should indicate whether follow-up imaging is recommended for such lesions.

CONCLUSION: Ambiguity in radiologist's language for incidental low-risk findings may contribute to increased patient anxiety and follow-up testing, warranting greater radiologist attention and potentially new practice or reporting strategies.

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Chong Hyun Suh, Young Jun Choi, Jung Hwan Baek, Jeong Hyun Lee

The diagnostic performance of shear wave elastography for malignant cervical lymph nodes: A systematic review and meta-analysis

OBJECTIVE: To evaluate the diagnostic performance of shear wave elastography for malignant cervical lymph nodes.

METHODS: We searched the Ovid-MEDLINE and EMBASE databases for published studies regarding the use of shear wave elastography for diagnosing

malignant cervical lymph nodes. The diagnostic performance of shear wave elastography was assessed using bivariate modelling and hierarchical summary receiver operating characteristic modelling. Meta-regression analysis and subgroup analysis according to acoustic radiation force impulse imaging (ARFI) and Supersonic shear imaging (SSI) were also performed.

RESULTS: Eight eligible studies which included a total sample size of 481 patients with 647 cervical lymph nodes, were included. Shear wave elastography showed a summary sensitivity of 81 % (95 % CI: 72–88 %) and specificity of 85 % (95 % CI: 70–93 %). The results of meta-regression analysis revealed that the prevalence of malignant lymph nodes was a significant factor affecting study heterogeneity (p<.01). According to the subgroup analysis, the summary estimates of the sensitivity and specificity did not differ between ARFI and SSI (p<.93).

CONCLUSION: Shear wave elastography is an acceptable imaging modality for diagnosing malignant cervical lymph nodes. We believe that both ARFI and SSI may have a complementary role for diagnosing malignant cervical lymph nodes.

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Carlos Torres, Matthew Hogan, Satya Patro, Santanu Chakraborty, Thanh Nguyen, Rebecca Thornhill, Mark Freedman, Miguel Bussiere, Hamid Dabirzadeh, Betty Anne Schwarz, Stefanie Belanger, Lysa Legault-Kingstone, Mark Schweitzer, Cheemun Lum

Extracranial Venous abnormalities: A true pathological finding in patients with multiple sclerosis or an anatomical variant?

OBJECTIVE: To evaluate the extracranial venous anatomy with contrast-enhanced MR venogram (CE-MRV) in patients without multiple sclerosis (MS), and assess the prevalence of various venous anomalies such as asymmetry and stenosis in this population.

MATERIALS AND METHODS: We prospectively recruited 100 patients without MS, aged 18–60 years, referred for contrast-enhanced MRI. They underwent additional CE-MRV from skull base to mediastinum on a 3T scanner. Exclusion criteria included prior neck radiation, neck surgery, neck/mediastinal masses or significant cardiac or pulmonary disease. Two neuroradiologists independently evaluated the studies to document asymmetry and stenosis in the jugular veins and prominence of collateral veins.

RESULTS: Asymmetry of internal jugular veins (IJVs) was found in 75 % of subjects. Both observers found stenosis in the IJVs with fair agreement. Most stenoses were located in the upper IJV segments. Asymmetrical vertebral veins and prominence of extracranial collateral veins, in particular the external jugular veins, was not uncommon.

CONCLUSION: It is common to have stenoses and asymmetry of the IJVs as well as prominence of the collateral veins of the neck in patients without MS. These findings are in contrast to prior reports suggesting collateral venous drainage is rare except in MS patients.