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Male Health

Do we need MRI and/or CEUS for diagnosis of prostate cancer? H Wijkstra, AMC University Hospital, Netherlands

No sensitive imaging technique is available for prostate cancer (PCa) and therefore the final diagnosis is always based on 10 or more systematic biopsies. Cancer is associated with angiogenesis and neovascularization. For PCa, a twofold increase of microvessel density has been reported. Due to angiogenesis it is assumed that blood perfusion differs in tumors as compared to benign tissue. Therefore, imaging techniques visualising differences in perfusion may improve diagnosis and localisation of PCa. CEUS, as compared to multi-parametric MRI, is more suitable in terms of cost, time and resolution and it can facilitate real-time guidance of biopsies. Nevertheless, MRI is currently proposed as an imaging modality for PCa localisation and staging. To achieve satisfactory results, different MR techniques have to be combined. The analysis of e.g. contrast-MRI with mathematical models describing the inflow and washout of contrast are used to significantly increase the accuracy of MRI. We believe that advanced perfusion modeling techniques may also make CEUS a potential accurate PCa imaging technique.

Methods:
We use two different approaches that use the time-intensity curve to extract parameters: 1) Calculating perfusions parameters as for example wash-in rate and 2) a new method which was denoted Dispersion Ultrasound Contrast Imaging. Both methods are under investigation in patients undergoing systematic biopsies and in patients scheduled for radical prostatectomy. In the latter also MRI imaging is performed.

Results:
During the presentation examples of MRI and CEUS imaging together with analysis results will be presented. Additionally, results of molecular imaging with CEUS will be shown.

Conclusions:
Large scale use of multi-parametric MRI is hardly feasible due to costs and time constrains. Therefore, using advanced analysis algorithms just as already in use for MRI, CEUS has the potential to become the optimal imaging modality for PCa.

Elastography and CEUS in focal testicular lesions. DY Huang, King's College Hospital, London

The aim of this talk is to illustrate the potential of different and newer ultrasound techniques, beyond conventional B-mode and colour Doppler US imaging, including contrast-enhanced ultrasound (CEUS) and tissue elastography in the characterisation of both benign and malignant intra-testicular lesions.

Ultrasound is widely accepted as the first-line imaging technique for many common and uncommon testicular diseases. Traditionally, B-mode US is extremely sensitive in the detection of testicular masses, but does not provide histological diagnosis, and the recognition of the benign entity may be challenging. Although not entirely diagnostic, newer US techniques such as contrast-enhanced ultrasound (CEUS) and tissue elastography (TE), in addition to B-mode imaging, are available to provide a more detailed interrogation of focal testicular lesions. The use of CEUS improves characterisation of testicular lesions, and confirms lack of vascularity in benign abnormalities such as epidermoid cysts, infarctions, abscesses and changes following trauma. Tissue Elastography allows further evaluation of the cellular consistency of the abnormality.