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Satellite Symposia (D)

Thursday, March 6 370
Friday, March 7 373
Saturday, March 8 376
Sunday, March 9 381

Thursday, March 6

10:30 - 11:30 **Studio 2014**

jointly organised by Siemens Healthcare and Bayer HealthCare

SY 1

Beyond imaging in breast MR: innovation and workflow optimisation in clinical practice

Moderator
L. Moy; New York, NY/US

MR vacuum assisted biopsies and contrast injection optimisation
F. Stöblen; *Essen/DE*

Purpose: Visualisation of suspicious lesions in breast MRT for the MR-steered biopsy utilising an optimised contrasting protocol. Typically, the contrast-enhanced MR visualisation of breast lesions with a single contrast agent administration is marred by a swift enhancement and an equally swift washout, resulting in an unfavourably short period of reliable focus delineation. Consequently, the biopsy based on such findings will be error prone, since the region of interest may have shifted after imaging or been erroneously identified in the first place. Since the reliable identification of relatively small foci is the main objective of contrast-enhanced breast MRT, these shortcomings seriously impair the method's explanatory power with respect to the important discrimination between benign and malignant lesions. The present study seeks to establish a protocol that provides the best possible diagnostic value in interventional contrast MRT-based breast lesion biopsy evaluation. **Methods and Materials:** MRT methods employed included 'reference' (single administration of 0.1 mMol/kg body weight, n = 11), 'single maximum dosage' (n = 11), 'continuously low' (n = 10), 'continuously high' (n = 13), and 'intermittent' (n = 9). MRT findings of 54 breast cancers by two different experienced examiners were evaluated. Both examiners rated the items 'image quality' (verbal rating scale [VRS] good - 1, average - 2, poor - 3), 'visualisation' (excellent - 1, good - 2, moderate - 3, poor - 4, no - 5), and 'confidence of diagnosis' (very confident - 1, confident - 2, not confident - 3, not confident at all - 4). Ratings of both examiners were assessed in terms of inter- and intra-rater reliability. **Results:** As compared to the reference (quality-controlled pathology), continuously low dosage yielded the best results (i. e. highest agreement between both examiners and the reference standard) across experimental conditions. **Conclusion:** Continuously low dosage might be the most explanatory examination modality for the MRT-guided interventional examination of breast lesions employing contrast-enhanced MRT.

Economic aspects and the future of breast MR
C.G.N. Kaiser; *Mannheim/DE*

Purpose: The purpose of this study is to evaluate the economic aspects (cost vs. savings) of the use of MR with dense breasts as additional indication. **Methods and Materials:** The study included 1488 patients after dropout between 04/2006 and 12/2011. As result we found 76 true-positive cases (invasive cancers and/or DCIS), 48 false-positive cases, 971 true-negative cases and 0 false-negative cases. The true-negative findings were either confirmed by histology upon recommendation of an external institution (18 patients) or follow-up by MRM or patient questionnaires over the next 5 years by mail (1737 cases). 393 patients were lost to follow-up. **Results:** The overall costs for patients (MRM examinations, biopsies and costs of limited surgeries) included in this study resulted in expenses to the amount of € 1.53 Mio. (€ 1.187 Mio. MRM cost + € 304.000 for further treatment of true-positive findings + € 48.000 for the biopsy of 48 false-positive findings). On the contrary, the estimate amount of savings (prevented biopsies, reduced surgeries) ranged from € 2.65 Mio to € 4.15 Mio (€ 2.15 Mio in prevented biopsies and treatment + 76 true-positive findings, resulting in a total of € 0,5 - 2 Mio. in less extensive treatment). This results in savings for the insurance company of € 1.1 Mio. - € 2.6 Mio., i.e. a cost reduction of at least 50% could be achieved, in case MRM was performed under high-quality conditions (i.e. high specificity through reader experience) in dense breasts.

Learning Objectives:
1. To learn appreciate the economic value and monetary benefits of MRM, analysing the cost reduction through the alteration of diagnostics and treatment.
2. To understand that optimal technical standards and reader experience seem inevitable prerequisites for the future adaption of MR indications.
3. To learn about MR-Mammography, though feasible, is probably not ready for "screening" today.

Simultaneous acquisition of breast imaging with PET/MRI a powerful tool to better classify lesions
L. Moy; *New York, NY/US*

Breast MRI is a helpful adjunct tool to detect mammographically and sonographically occult breast cancer. It has been used extensively to screen high-risk women; especially BRCA mutation carriers and to assess the extent of disease in women with known breast cancer. It is also used to assess response to neo-adjuvant chemotherapy. However, there is room for improvement because breast MRI has a very high sensitivity and a lower specificity. At NYU, we are fortunate to have recently acquired a molecular MRI that uses a 3 Tesla magnet and simultaneously acquires PET events. The Siemens Biograph mMR offers the fused advantages of PET and MRI without radiation of CT.
Learning Objectives:
1. To review our localised breast PET/MR protocol and to share our preliminary results.
2. To discuss how breast PET/MR may be useful in the evaluation of breast lesions.
3. To discuss adjunctive tools from PET/MR that may increase specificity of the exam and provide additional information using a multi-parametric approach.

Panel discussion

12:00 - 13:30 **Studio 2014**

jointly organised by Siemens Healthcare and Bayer HealthCare

SY 2

Multimodality lunch symposium: what does a breast imaging system have to perform?

Moderator
H. Bosmans; Leuven/BE

3D automated breast ultrasound: accuracy and diagnostic potentials
M.J.C.M. Rutten; *'s-Hertogenbosch/NL*

Automated 3D breast ultrasound (US) is a new technique, which scans the breast automatically and almost entirely. Data sets can be stored and are available for 3D cross-correlating review. This new technique may eliminate the subjectivity of conventional 2D ultrasound and disconnect the acquisition and assessment of US data. It facilitates the possibility of double reading, review of follow-up studies and the application of computer-aided detection. Issues to be discussed are: 1. implementation of automated 3D breast ultrasound in the clinical radiological setting; 2. technique of reading and interpretation of 3D US data sets; 3. standardisation of assessment and reproducibility (e.g. CAD and reading software); 4. diagnostic yield, sensitivity and specificity and factors influencing these, such as limitations, artefacts, pitfalls and errors due to irrationality.
Learning Objectives:
1. To learn how to implement 3D breast US in daily practice.
2. To become familiar with reading technique and software.
3. To comprehend the limitations of 3D breast ultrasound.

2D FFDM vs 3D DBT, with special respect to syngo.breast care and optimised workflow, possibilities and challenges with 2D FFDM vs 3D DBT
S.H. Heywang-Köbrunner; *Munich/DE*

FFDM technology has made significant progress since its introduction, when equivalence to conventional mammography was still doubtful. Today, excellent resolution and optimized contrast are achieved at lower dosages than is possible with conventional mammography. Regular availability of previous films is very helpful. To take full advantage of the digital technology, image display

and logistics (e.g. hanging protocols) of the reading should be optimized in each department or practice and should be supported by the manufacturer. Further optimisation might include automated density measurement and automated export of density measurements (which might in the future be useful as risk predictor). Limitations which still need to be considered are as follows: 1) Though contrast has been optimized, there are still differences in the contrast between vendors and even with changing algorithms of the same vendor. Readers should be aware of such pitfalls. 2) To date, no standardization exists for image contrast or automated density measurements. So, thresholds cannot be transferred. Tomosynthesis (TS) promises further important improvement of sensitivity and specificity, particularly in the screening situation. Furthermore, it may allow more accurate density measurement. However, TS is associated with increasing reading time and possibly even increased reader fatigue. Studies on the latter topic are lacking. To date, comparability of TS between the vendors is not yet established. Considering the importance of previous studies (which usually are 2D FFDM), either 2D reconstructions or 3D rendering may be of great importance for reading logistics. Due to increasing possibilities, which are associated with increasing demands to the readers, efforts to optimize reading logistics and research for CAD support s should be encouraged.
Learning Objectives:
1. To learn about optimising reading logistics of FFDM.
2. To learn about pitfalls to remember (comparability of contrast or measurements).
3. To become familiar with possibilities of tomosynthesis and topics for its implementation.

Breast lesion detection and characterisation with MRI in less than two minutes
R.M. Mann; *Nijmegen/NL*

Breast MRI is highly sensitive for the detection of breast cancer. Nevertheless, it also detects many benign lesions that would otherwise have gone unnoticed. In our efforts to increase the specificity of breast MRI, in recent years many additions to the basic breast MRI protocol have been proposed. These include T2, diffusion-weighted imaging and spectroscopy. Although proven effective, this lengthens the scan protocol and makes MRI more expensive. Due to the recent improvement in the image quality of very fast dynamic series, it is now possible to document contrast inflow in the tumour at a high spatial resolution. This allows monitoring of the inflow phase rather than the outflow phase. In over two years of clinical practice, we have not discovered a single lesion that was visible on the conventional contrast-enhanced acquisitions, but was occult on the inflow evaluation. Parameters derived from this evaluation, time to enhancement and maximum slope are much stronger discriminators between benign and malignant disease than the conventional BIRADS curves. Consequently, also specificity is increased. In contrast to conventional approaches, the time to enhancement is linked to the tumour grade and hence also allows an approximation of important histopathologic parameters. Very recent improvements include a further increased spatial resolution, CAD based on fast dynamic evaluation, as well as the addition of Dixon, thus enabling fast dynamic fat-saturated imaging. It is therefore possible to limit the dynamic evaluation to the inflow only, shortening the scan protocol to approximately 2 minutes. This highly increases the feasibility of breast MRI as a screening tool.

What the radiologist need to know in order to have breast MR referrals
N.N.

Despite the use of breast MR since 30 years (since 1983), there are still a lot of controversial reasons for the acceptance or refusal of breast MR. The best case has very high sensitivity AND specificity so as not to get many false positives. For that, the radiologist must verify that he has a lot of experience, especially knowledge of many morphological and kinetic signs to differentiate between benign and malignant lesions. A radiologist doing breast MR should not have more than 2% false-positive biopsies. There is still not consensus for this. Therefore, a variety of reasons have to be understood to be really helpful to the patients.

Panel discussion

12:30 - 13:30 **Room L/M**

organised by SuperSonic Imagine

SY 3

The benefits UltraFast™ imaging bring to ultrasound

The Ultrafast ultrasound revolution: current and future applications
M. Tanter; *Paris/FR*

ShearWave™ elastography of solid breast lesions: benign versus malignant differentiation and prediction of disease behavior
A. Evans; *Dundee/UK*

The advances of liver ultrasound imaging and innovative ShearWave™ elastography
C.F. Dietrich; *Bad Mergentheim/DE*

The advantages and clinical Impacts of ShearWave™ elastography in prostate imaging
J. Walz; *Marseille/FR*

12:30 - 13:30 **Room N/O**

organised by Bayer Healthcare

SY 4

Optimising contrast: thank you for your attenuation!

Moderator
J.E. Wildberger; Maastricht/NL

Prelude. The recipe.
J.E. Wildberger; *Maastricht/NL*

Enhance! The clinics.
M. Forsting; *Essen/DE*

Encore. The outlook.
U.J. Schoepf; *Charleston, SC/US*

14:00 - 15:30 **Studio 2014**

organised by Siemens Healthcare

SY 5

Digital breast tomosynthesis and low dose mammography: how innovations compliment clinical routine

Moderator
S.H. Heywang-Köbrunner; Munich/DE

Digital breast tomosynthesis: from a first idea to clinical routine
J. Barkhausen; *Lübeck/DE*

Mammography is the most important breast imaging technique allowing the visualisation of masses and micro-calcifications. However, in conventional mammography, the three-dimensional breast tissue is reduced to a two-dimensional image and a small lesion may be undetectable due to superimposed glandular tissue. Therefore, immediately after the introduction of whole body computed tomography, several groups investigated the new imaging technique for the detection of breast cancer. However, due to limited spatial resolution and the high radiation exposure, the technique never made it into daily clinical practice. These limitations were overcome with the

development of high-resolution digital mammography and in 1997 the first results of limited angle tomography using a full-field digital mammographic system were published by Niklason. The prototype scanner was optimised within the next decade and digital breast tomosynthesis is now commercially available in clinical routine. 7 to 30 low-dose mammographic projections are performed over a limited angle of up to 60 degrees and based on these images a stack of cross-sectional images covering the entire breast is reconstructed with an interslice distance of about 1 mm. The glandular dose of a tomosynthesis scan is higher than one-view mammography, but significantly lower compared to a standard mammography in two projections. Recently, several large clinical trials have shown that tomosynthesis improves tumour detection as well as the characterisation of focal masses. DBT adds important information to standard two-projection mammography and the encouraging results warrant further clinical investigation in large trials.
Learning Objectives:
1. To understand the technical basics of digital breast tomosynthesis (DBT).
2. To learn about hard- und software developments to optimise DBT.
3. To discuss current indications and future applications of DBT

Technical optimisation of digital breast tomosynthesis for future breast screening
P. Timberg; *Malmö/SE*

Digital breast tomosynthesis (DBT) is considered a promising alternative to digital mammography (DM). Screening trials are investigating the performance of DBT compared to DM and in combination with DBT. If DBT is to be implemented in screening, many technical challenges in DBT remain to improve image quality and reading conditions. This presentation will focus on studies on different acquisition schemes, reading time, the use of slabbing of reconstructed slices, different image reconstructions and viewing conditions (frame rates and image orientation). This will be exemplified by studies from our research group and others. A second topic is breast compression. Can reduced compression be used in DBT and how is actually the pressure distribution over the breast during compression? Is compression harmful and is there a risk of tumour cell shedding?
Learning Objectives:
1. To become familiar with digital breast tomosynthesis, which faces challenges in reading time.
2. To understand that slabbing is a promising choice to reduce data and reading time.
3. To understand that breast compression can be significantly improved.

Is DBT the new standard in the diagnostic imaging of the breast? How to implement DBT as a method in specialist training?
C. Van Ongeval; *Leuven/BE*

In the early reports on tomosynthesis (DBT), an improvement in both sensitivity and specificity in lesion detection and characterization was found compared to 2D imaging. Meanwhile, DBT has been introduced in screening and preliminary reports suggest a reduction in recall rate which is mainly correlated to a better characterization of the mass lesions. While the introduction of a new technique in screening is time-consuming, the introduction in the diagnostic work is much more direct. Notwithstanding the fact that DBT is already used in some clinical practices, questions on the performance of DBT in the different tasks of diagnostic imaging remain: 1) Can DBT replace additional views? 2) Can DBT predict better the correct diameter and amount of lesions preoperatively compared to 2D imaging? 3) Can DBT evaluate more accurately the surgical scar and surrounding breast tissue in a treated breast? 4) Is DBT better in the evaluation of dense breasts in high-risk patients? In case of screening with digital mammography, 8 h of theoretical and practical training was advised and applied by many countries. Gur et al. already showed in 2009 that training in DBT reading can result in a better performance of DBT. Therefore, additional training should be advised not only in screening, but also in diagnostic implementation of DBT.
Learning Objectives:
1. To learn about the advantages of DBT in diagnostic imaging of the breast.
2. To become familiar with the strength and weaknesses in relation to mass lesion and microcalcifications diagnosis.
3. To appreciate the impact of training in reading DBT.

High image quality with lower dose mammography
K. Ridder; *Dortmund/DE*

Purpose: After evaluating the study we published last year about “Dose saving and image quality of digital mammography acquired without anti-scatter grid in combination with a novel software-based scatter correction (SBSC)”, we validated the effects of this technique in our daily routine in breast imaging. **Methods and Materials:** Therefore, we compared the Image acquisition, dosage and image quality of actual patients who underwent a mammogram with PRIME technology and SBSC with prior examinations, done on the same Inspiration machine before. **Results:** The results showed a significantly reduced dosage of all examined patients with at least the same or even better image quality with PRIME technique, without any loss of information or prolonged examination/computing time. **Conclusion:** Prime technology with SBSC enables you to produce very high image quality at the lowest radiation dose without any disadvantages in routine workflow.

Panel discussion

16:00 - 17:00 **Studio 2014**

organised by Siemens Healthcare

SY 6

Advanced multimodality breast image reading

Moderator
C. Van Ongeval; Leuven/BE

Place of digital breast tomosynthesis in diagnostic investigation of breast lesions
L.J. Pina Insausti; *Pamplona/ES*

Digital Breast Tomosynthesis (DBT) is an emerging technique that has improved the accuracy of Digital Mammography (DM). In particular, it has been proven that DBT significantly increases the detection rate of breast cancers. Two main scenarios can be considered for the use of DBT: Problem solving technique: DBT can play an important role as a complementary technique for the evaluation of lesions detected on DM. DBT can reduce the recall rate and can reclassify BI-RADS 0 lesions to other categories based on the analysis of the shape and margins. The use of DBT can virtually eliminate the spot compressions, but not magnification views for microcalcifications. Detection of additional breast cancers: DBT can improve the sensitivity of DM, detecting additional breast cancers that are not visible on conventional DM. This technique is especially useful in dense breasts, where the sensitivity of DM is low. It is not reasonable to perform DBT for fat breasts because the sensitivity of DM is very high. A lesion needs to be surrounded by at least a small amount of fat to be visible on DBT. This is why some lesions can be hidden in very dense breasts (ACR pattern 4) even for DBT. Ultrasound is also capable of detecting occult cancers, and more studies are needed to compare both modalities.
Learning Objectives:
1. To show the different indications to perform digital breast tomosynthesis (DBT).
2. To learn about the semiology of the lesions detected by DBT.
3. To understand the advantages of complementary DBT.

Place of breast MRI in diagnostic investigation of breast lesions
E. Wenkel; *Erlangen/DE*

Breast MRI as a highly sensitive tool for cancer detection has become an accepted method in breast imaging among mammography and ultrasound. Several indications are widely accepted like screening women at high risk of breast cancer, occult primary breast cancer, search for recurrent disease in inconclusive mammography and ultrasound. However, MRI is often not available for women due to different reasons like reimbursement from health insurances or lack of scanners. More recent developments like tomosynthesis claim to replace conventional mammography. Hence each modality is not suitable for every patient or maybe not every patient needs all available imaging modalities. On the basis of clinical examples with the focus on recurrent disease we want to discuss the different imaging methods dependent on the patient’s clinical history, breast density and histology.
Learning Objectives:
1. To discuss different approaches to detect (recurrent) breast cancer.
2. To learn criteria to distinguish between benign and malignant breast lesions.
3. To discuss the different imaging modalities for different patients.

Panel discussion

Friday, March 7

12:30 - 13:30 **Room B**

organised by Toshiba Medical Systems

SY 7

Adaptive diagnostics: solving clinical challenges

Moderator
D. Hahn; Berlin/DE

A new reconstruction algorithm: single energy metal artefacts reduction (SEMAR), applied for evaluation of hip protheses
P.A.G. Teixeira; *Nancy/FR*

Total Hip Arthroplasty (THA) is frequently performed for the treatment of advanced degenerative joint disease of the hip. Complication rates are low but the great number of hip prosthesis implanted renders radiologists prone to be confronted to post surgical peri prosthetic complications. Radiography remains the first step to assess a THA but CT-scans, MRI and sonography are now complementary tools that might be useful for the etiological diagnosis of a painful THA. Common indications for CT of THA are a painful hip prosthesis with normal radiographic findings, the assessment of osteolysis before surgical revision, the evaluation of soft tissues complications and the measurement of acetabular cup placement. Classic CT-scan is hampered by metal artifacts and is responsible for high radiation dose to the patient. Soft tissues anomalies are hardly seen with classic CT-scan. When optimized to reduce metal artifacts using suitable acquisition techniques and new algorithms, CT-scan is the most polyvalent technique to assess the components of the prosthesis, the cement and the bone interface, the bone stock and the soft tissues. These new algorithms: iterative reconstruction (AIDR 3D) and metal artifact reduction (SEMAR) software improve the image quality while reducing the dose. The objective of this presentation is to show how to improve prosthesis evaluation with CT scan.

Lung subtraction versus dual energy
M. Prokop; *Nijmegen/NL*

Pulmonary embolism with CT is a great challenge because small thrombi can easily be missed (many small arteries), differentiation partial volume making real embolus difficult. Furthermore, reduced lung perfusion almost invisible on standard CT. In this lecture, we will look into Dual Energy and Subtraction imaging techniques to detect perfusion defects, to help localise small emboli, and to increase a prognostic value. Both advantages and down sides of each method will be analysed and presented.

12:30 - 13:30 **Room D**

organised by Bayer HealthCare

SY 8

Advances in contrast enhanced MRI

Moderators
M.F. Reiser; Munich/DE
B. Song; Chengdu/CN

Programme not available by date of print

12:30 - 13:30 **Room E1**

organised by Guerbet

SY 9

When contrast innovation drives the safety of the patient

Moderator
M. Dewey; Berlin/DE

Introduction
M. Dewey; *Berlin/DE*

MR-guided biopsy in breast cancer: when interventional MRI and macrocyclic contrast media are companions for a safe patient follow-up
K. Pinker-Domenig; *Vienna/AT*

Dynamic contrast-enhanced magnetic resonance imaging (DCE-MRI) of the breast is the most sensitive method for detection and staging of breast cancer providing both morphologic and functional information. DCE-MRI is widely used not only for diagnosis and staging, but also assessment of the treated breast and image-guided interventions. This presentation aims to provide a comprehensive overview on the indications of DCE-MRI in patients prior to and after breast cancer therapy, to become familiar with the DCE-MRI features of the treated breast and to learn about MR image-guided interventions in case of suspected recurrence.

X-act in cardiac CT: results of a multicenter randomised study towards better patients' safety through low radiation and iodine dose
M. Dewey; *Berlin/DE*

The aim is to compare the evaluability of coronary computed tomography (CT) angiography scans using three iodinated contrast agents with different concentrations in a multicenter non-inferiority phase-IV trial including patients with suspected coronary artery disease. From November 2010 until September 2012, 468 patients underwent coronary CT angiography in 24 European centers. The primary outcome was the evaluability of CT based upon the grading of 18 coronary segments per patient for quality and interpretability of images. Out of the 468 patients included (57.8±12.4 years, 57.7% male, 77.5±15.5 kg, 61.6± 9.2 bpm), 452 patients were available for the primary analysis. Randomisation efficiently balanced all patients' baseline characteristics and resulted in 151, 152, and 149 patients undergoing CT using Xenetix 350, Ultravist 370, and Iomeron 400. The non-inferiority was demonstrated for the primary outcome per-patient evaluability for Xenetix (92.1%) when compared with Ultravist (95.4%) and Iomeron (94.6%), respectively ($p<0.05$ for testing difference vs non-inferiority margin). There were no significant differences between the three groups regarding safety and efficacy (image quality, stenosis, assessment, and signal quantification), and regarding overall amount and flow of contrast agent (79.5±9.6ml @ 5.3±0.7ml/s, 79.1±10.2ml @ 5.2±0.7ml/s and 79.2±9.4ml @ 5.2±0.7ml/s respectively for Xenetix, Ultravist and Iomeron ($p<0.94$, $p<0.49$)). The mass of iodine (in g) injected was significantly lower for Xenetix (27.8±3.4) than Ultravist (29.3±3.8) and Iomeron (31.7±3.8), $p<0.001$. In conclusion, Coronary CT angiography using Xenetix 350 is non-inferior to higher concentration contrast agents regarding image quality and evaluability while the amount of iodine required can be significantly reduced.

TACE in HCC: cone beam CT and arterial feeders detection improves patient survival
H. Kobeiter; *Paris/FR*

Cone-beam computed tomography (CBCT) has already proven its worth when used during intra-arterial therapy for liver cancer and is therefore likely to become indispensable as an imaging tool during transarterial chemoembolisation. CBCT provides three-dimensional (3D) volumetric information that is critical for the three main TACE steps: tumour localisation, planning and guidance for catheterisation, and intra-procedural evaluation of treatment success. CBCT technology is rapidly evolving along with the development of multiphasic-CBCT imaging techniques, which combine various CBCT acquisitions and intra-arterial contrast injection. In particular, the dual-phase CBCT_(DP-CBCT) technique has improved tumour detection accuracy to the point that it is now approaching that of diagnostic imaging. By providing 3D-hepatic arterial anatomy information, DP-CBCT can help catheter navigation to reach the targeted tumour. The availability of a DP-CBCT is advantageous also for planning of therapy delivery and guidance during catheterisation: A)The first phase to define hepatic arterial anatomy B)The second phase to accurately identify the boundaries of the targeted tumour.

Automated software facilitates the identification of tumour feeding arteries and provides a 3D-roadmap. DP-CBCT imaging can also be used for intra-procedural assessment of treatment success because it is highly predictive of tumour response with follow-up MR imaging. CBCT imaging has been shown to predict tumour response on the post-treatment follow-up diagnostic imaging and to be an independent factor associated with longer overall survival after TACE. In conclusion, CBCT is becoming an essential and indispensable tool in interventional oncology.

Questions and conclusions
M. Dewey; *Berlin/DE*

12:30 - 13:30 **Room F2**

organised by Siemens Healthcare

SY 10

Leading. With MAGNETOM.

Programme not available by date of print

12:30 - 13:30 **Room G/H**

organised by Bracco

SY 11

Breast MRI: how to make it available to more patients

Moderator
T.H. Helbich; Vienna/AT

Introduction: shaping the future of breast MRI
T.H. Helbich; *Vienna/AT*

Breast MRI and other diagnostic tools
F.J. Gilbert; *Cambridge/UK*

Identifying patients that can benefit from MRI
F. Sardanelli; *Milan/IT*

Optimising MRI scanning protocols for breast cancer screening
C.K. Kuhl; *Aachen/DE*

12:30 - 13:30 **Room I/K**

organised by GE Healthcare

SY 12

Latest advances in cardiac MR

Moderator
J.-L. Sablayrolles; St. Denis/FR

GE vision for cardiac MR
A. Brau; *Munich/DE*

Ischemic cardiac disease: the role of cardiac MR vs other imaging modalities
G. Pontone; *Milan/IT*

Quantitative MR imaging of myocardial fibrosis
E. Mousseaux; *Paris/FR*

12:30 - 13:30 **Room L/M**

organised by Mallinckrodt Pharmaceuticals

SY 13

Optimising image quality: does OptiBolus™ change the paradigm?

Moderator
T.J. Vogl; Frankfurt a. Main/DE

Introduction and OptiBolus™ basics
T.J. Vogl; *Frankfurt a. Main/DE*

OptiBolus™ in liver and abdominal imaging
T.J. Vogl; *Frankfurt a. Main/DE*

Cardiovascular CT with OptiBolus™
C. Loewe; *Vienna/AT*

OptiBolus™ in rare and unusual indications
C. Saade; *Beirut/LB*

Panel discussion

12:30 - 13:30 **Studio 2014**

organised by Hitachi Medical Systems Europe

SY 14

Ultrasound solutions clearly defined

Moderator
P. Sidhu; *London/UK*

Clinical impact of-high resolution technologies in everyday ultrasound clinical practice
F. Calliada; *Pavia/IT*

Aim of the presentation is to introduce examples of clinical cases prepared using Hitachi Aloka Medical ultrasound systems. The abdominal high resolution imaging permitted us to evaluate even the more subtle parenchymal differences in the liver and kidneys. Colour Doppler with and without eFLOW facilitated the detection of flow, both in cases of deep and difficult vascular abnormalities and in the presence of detail-rich superficial, low velocity, vascular flow. CEUS allowed us to increase the specificity of ultrasound B-mode enabling us to assess the micro-vascular patterns of lesions of the liver and kidney. The extreme high resolution of the Hitachi Aloka Medical matrix probes allowed us to study superficial structures with incredible detail both in MSK and neck pathologies and the diagnostic accuracy was further increased by the use of Hitachi Real-time Tissue Elastography in addition to the Doppler and CEUS.

A new stage of real-time tissue elastography
K. Nakashima; *Okayama/JP*

Real-time tissue elastography for breast has become a very popular ultrasound tool in Japan, not only for diagnosis but also in monitoring treatments. Many Japanese physicians and radiologists have experience of the usefulness of breast elastography in daily clinical examination. Today, many ultrasound manufacturers support different elastography methods which include strain imaging and shear wave imaging. In order to introduce some standardisation, guidelines on the clinical use of elastography in breast examinations will be published by WFUMB. The most useful diagnostic tool for elastography of the breast is the FLR (Fat Lesion Ratio) measurement. And, as a further development, the function of assist strain ratio has been proposed for the purpose of automatic FLR measurement. My presentation will describe the WFUMB guidelines and a new stage of real-time tissue elastography including the evaluation of assist strain ratio.

MRI and ultrasound fusion in MSK pathology: the art of studying structures in static and motion

A. Guermazi[1], J. Renoux[2]; [1]*Boston, MA/US*, [2]*Paris/FR*

MRI is widely used in musculoskeletal pathology. However, ultrasound offers unique advantages of high spatial resolution, real time dynamic scanning and ease of vascular exploration. real time virtual sonography (RVS) which synchronises MRI and ultrasound images can display information from both modalities at the same time using magnetic navigation. This new technique is promising in musculoskeletal imaging since ultrasound scanning is facilitated by MRI anatomical information helping radiologists to visualise difficult anatomy. Dynamic ultrasound may provide real time functional information about pathology seen on MRI such as mobility of knee meniscal flaps within articular recess or synovial plicae. Other indications for RVS include evaluation of peri-prosthetic pathologies by ultrasound using MRI-based anatomical landmarks. Finally, ultrasound-guided interventions coupled with MRI contrast resolution may result in higher procedure accuracy and lower morbidity.

Saturday, March 8

12:30 - 13:30 **Room D**

jointly organised by Siemens Healthcare and Bayer HealthCare

SY 15

Synergies in CT for better patient care

Moderator
A. Mahnken; Marburg/DE

Programme not available by date of print

12:30 - 13:30 **Room E1**

organised by Toshiba Medical Systems

SY 16

Expanding clinical boundries in ultrasound

Moderator
V. Mitkov; Moscow/RU

Genitourinary ultrasound: advanced diagnostics in prostate cancer and scrotal lesions
T. Fischer; *Berlin/DE*

Prostate: Men with an elevated serum level of prostate-specific antigen (PSA) or suspicious findings on digital rectal examination (DRE) are examined by transrectal ultrasound (TRUS). For histological confirmation and therapeutic planning, ultrasound guided systematic biopsy of the prostate is performed. However, in a subgroup of patients with elevated PSA levels, no malignancy is detected by biopsy or up to four biopsies are performed before prostate cancer is detected. A negative biopsy therefore does not exclude prostate cancer. In consequence, unnecessary biopsies with an increase of complications are performed in healthy men. Real-time MR/US image fusion may enhance cancer detection rates of TRUS-guided biopsies and contributes to lesion characterisation by state-of-the-art US techniques. The study presented here for the first time compares state-of-the art US techniques after contrast medium administration with MRI and histology as the standard of reference. Scrotum: Ultrasound is the imaging modality of choice for the examination of the scrotum. The propblem of tumour / haematoma misinterpretation can result in unnecessary orchiectomy. CEUS for the testis can be currently recommended for the differentiation between hypovascular and avascular lesions (benign).
Learning Objectives:
1. To investigate whether multiparametric magnetic resonance imaging (MRI) allows lesion localization in prostate cancer in patients scheduled for MR/US fusion biopsy and whether the findings correlate with new ultrasound techniques.
2. To understand why prostate lesions were classified on the basis of MRI and US (B-mode scan, power Doppler, elastography/TDI, CEUS).
3. To understand why targeted biopsies were performed in the MR/US fusionmode.
4. To learn about indications for the use of CEUS in focal testicular lesions, secmental infartion, after trauma and abscess formation in severe epididymoorchitis.

Abdominal and high-frequency ultrasound imaging: latest technologies for improved lesion detection and characterisation
A. Lim; *London/UK*

This talk will encompass the latest technological developments of the Aplio 500 with particular focus on a few advanced applications for abdominal and small parts ultrasound. These newest developments include the improved visualisation of the microvasculature without the need for contrast and its potential clinical applications will be discussed. There have also been significant improvement in specialist applications such as elastography and also improved sensitivity in high frequency contrast technology. The latter now also allows reliable detection of the sentinel lymph node and their clinical impact will be outlined and illustrated.

Seeing the unseen: new clinical findings by novel imaging techniques
J. Hata; *Kawasaki/JP*

In this session, the clinical experience of Superb microflow imaging (SMI), which is the novel application of Aplio 500 from Toshiba, is discussed. SMI is a unique ultrasound Doppler imaging employing multi-dimensional filter that makes it possible to depict minute vessels with slow velocity, without using contrast agents. In other words, the advantages of SMI are; 1.high frame rate, 2. high sensitivity, 3. high resolution, and 4. less motion artifact. Therefore, SMI is useful in various situations encountered in daily practice. The evaluation of the density and the shape of tumor vessels with SMI help us diagnose and differentiate tumorous lesions and also could be the non-invasive modality for the assessment of therapeutic effect of chemotherapy. Since SMI clearly visualises minute vessels, it can also be used to evaluate the disease activity in inflammatory disorders, even in bowel inflammation such as ulcerative colitis, Crohn's disease, and so forth. Furthermore, the diagnosis of organ ischemia can be done accurately with SMI, which is expressed as the focal defect of minute vessels in a real-time fashion, with high spatial resolution. In addition, SMI provides more sensitive view of minute vessels after the injection of contrast agent, which helps us to obtain the sustained dynamic image of microflow even after the first pass of the contrast agent. In conclusion, SMI, which provides the dynamic image of microvessels, is an essential tool for the diagnosis and the evaluation of various clinical conditions.

12:30 - 13:30 **Room F2**

organised by GE Healthcare

SY 17

Developing innovative breast care solutions to improve clinical confidence

Moderator
D.B. Kopans; Boston, MA/US

Breast tomosynthesis in diagnostic work-up
A. Stork; *Düsseldorf/DE*

EASY study: integration of automated 3D breast ultrasound (ABUS) into the routine workflow of a high-volume hospital-based breast cancer screening program in Stockholm, Sweden
B. Wilczek; *Stockholm/SE*

Role of MRI in the breast cancer pathway in challenging situations
C.S. Balleyguier; *Villejuif/FR*

12:30 - 13:30 **Room G/H**

organised by Bracco

SY 18

Personalising an integrated approach to CT imaging

Moderator
C.J. Herold; Vienna/AT

Personalised CT imaging: are we there yet?
M. Francone; *Rome/IT*

Low Kvp protocols: what you should know
T. Albrecht; *Berlin/DE*

An integrated approach: what more is needed?
M. Prokop; *Nijmegen/NL*

12:30 - 13:30 **Room I/K**

organised by Samsung Medison

SY 19

A new technology for detecting and diagnosing: ultrasound breast CAD and ElastoScan quantification

Introduction of breast ultrasound CAD

Advances in CAD for diagnosis of breast cancer

Breast cancer detection with ElastoScan quanitification

Questions and answers

12:30 - 13:30 **Room L/M**

organised by Siemens Healthcare

SY 20

Pioneering the future of ultrasound

Moderator
P.S. Sidhu; London/UK

ARFI technique reproducibility and role in chronic liver disease: are we ready to replace liver biopsy?
P.S. Sidhu; *London/UK*

Ultrasound imaging of liver disease has until recently been restricted to a qualitative assessment of the parenchyma, visualisation of focal lesions and the establishment of bile duct dilatation. Subjective opinion of the presence of liver fibrosis is unreliable, advanced cirrhosis is often a clear sonographic diagnosis. Measurements of Doppler parameters to ascertain the presence of parenchymal disease have largely been disappointing; quantitate assessment being too variable for clinical consistency. Microbubbles generally have not been a success in the evaluation of diffuse liver disease using 'transit' times to the hepatic veins; although targeted microbubbles to elements of fibrotic change are a reality. Quantification of liver 'stiffness' using non-invasive methods, primarily Acoustic Radiation Force Impulse (ARFI) imaging are promising in assessing liver stiffness and indirectly liver fibrosis and cirrhosis. The possibility of employing this technique to assess patients for liver biopsy is gaining momentum. The reproducibility of measurements has been demonstrated and the ability to categorise different levels of fibrosis and hence the clinical management is now a reality. The capability to demonstrate 'normality' or 'severe fibrosis' is accurate with the number of liver biopsy procedures reduced, directly and ultimately patient morbidity is reduced. There is acceptable application of this technique in clinical practice in many centres dealing with chronic liver disease. This lecture will describe the usefulness of ARFI in clinical practice, with the ability to confidently triage patients into the various categories that genuinely influence clinical management.
Learning Objectives:
1. To understand why a non-invasive test for liver fibrosis is important.
2. To appreciate the technique of ARFI measurement's and the limitations.
3. To consolidate knowledge and apply ARFI into clinical practice.

Clinical benefits of fusion imaging and a new contrast software (CHI)
A. Nilsson; *Uppsala/SE*

The ability to fuse a current ultrasound examination with another imaging modality means that lesions seen on a previous CT or MRI can be found with ease, characterised, biopsied and possibly treated, all under ultrasound guidance. This increases the diagnostic accuracy and in many cases saves time and resources. The advent of a new contrast software (CHI) with an improved spatial resolution means that smaller lesions can be detected. CHI also enables an extension of the contrast late phase up to 6-7 minutes. This gives us more time to find metastatic lesions with a late phase wash-out and possibly means that lesions until now thought to have no wash-out within the usual timeframe, like hepatocellular carcinomas, can be assessed.
Learning Objectives:
1. To understand the principles of CT and MRI image fusion with ultrasound.
2. To appreciate the clinical and practical benefits of ultrasound fusion.
3. To understand the benefits of contrast harmonic imaging and where it is useful in clinical practice.

Virtual touch tissue imaging quantification (VTIQ): a new tool to measure breast tissue stiffness and for breast lesion assessment by ultrasound
M. Golatta; *Heidelberg/DE*

Purpose: To evaluate breast tissue stiffness with Virtual touch tissue imaging quantification (VTIQ) and to prospectively evaluate VTIQ as a new elastography method concerning its intra- and inter-examiner reliability, its ability to differentiate benign from malignant breast lesions in comparison to and in combination with B-mode BIRADS® assessment. **Methods and Materials:** B-mode ultrasound and VTIQ were performed 103 women with 104 lesions. Mean values of VTIQ for parenchyma and fatty tissue were compared between those measured in healthy breasts and in the surrounding of histologically proven benign and malignant lesions. Intra- and inter-examiner reliability of VTIQ were assessed. BIRADS® assessment was applied prior to VTIQ. The AUC, sensitivity, specificity, PPV and NPV of BIRADS®, VTIQ and combined data were compared. **Results:** The mean VTIQ values in parenchyma were significantly higher than in fatty tissue (3.23m/s ± 0.74 versus 2.5m/s ± 0.61;p<0.0001). In healthy breasts as well as in the surrounding of a benign or malignant lesion the VTIQ values of parenchyma and fatty tissue were similar. 54 of 104 lesions were malignant. Intra-examiner reliability was consistent, inter-examiner agreement showed a strong positive correlation assessed with orthogonal regression. The mean VTIQ-values in malignant lesions were significantly higher than in benign (7.73m/s ±1.02 versus 4.46m/s ±1.87;p<0.0001). The combination of US-BIRADS® with the optimal cut-off for clinical decision making of 5.18m/s, yielded a sensitivity of 98%, specificity of 82%, PPV of 86% and NPV of 98%. **Conclusion:** VTIQ is a reliable method for measuring the stiffness of breast tissue. There is a significant difference regarding the mean maximum velocity of benign and malignant lesions. Adding VTIQ to BIRADS® assessment improves the specificity.
Learning Objectives:
1. To become familiar with a new elastography technique - VTIQ.
2. To understand that standard breast lesion assessement using the BIRADS® can be improved by adding VTIQ.

12:30 - 13:30 **Room N/O**

organised by Philips

SY 21

Redefining image quality in CT

Moderator
L. de Vries; Best/NL

Advances in iterative model based reconstruction
R. Siemund; *Lund/SE*

Optimisation of radiation dose vs image quality is a constant challenge for CT technology. Dose reduction with maintained diagnostic image quality was in the past mainly achieved by improvement of the scanner hardware e.g. improved detector technology and optimised signal chain. Introduction of mainly statistic based iterative reconstruction techniques, like iDose^4, improves image quality by artifact reduction in the projection space and by advanced noise reduction in the image space, enabling dose reduction depending on body region and examination type. However the potential for dose reduction when using statistically based iterative reconstruction on already dose optimised protocols is limited and the resulting images are still noisy. Iterative Model Reconstruction (iMR) is a new type of advanced iterative algorithm using complex modeling of the data acquisition process and the scanner geometry in order to minimise noise and artifacts. Initial experience with iMR in clinical use and from phantom studies demonstrates impressive improvements in image quality: a) low noise levels regardless of radiation doses b) preserved low contrast resolution with reduced doses or markedly improved low contrast resolution at same dose levels as compared to iDose c) no smearing of structural information as in high level statistic based iterative reconstruction. These improvements enables simultaneously significant radiation dose reduction, increased low-contrast detectability and decreased noise levels.

Learning Objectives:
1. To become familiar with iterative model reconstruction, which is a major leap in noise reduction and improvement in low contrast detectability compared to statistic based iterative reconstruction.
2. To learn about image quality improvements achieved by iterative model reconstruction enables further radiation dose reduction, routinely use of thinner slices or narrower windows width.

Novel applications of spectral detector CT
J. Sosna; *Jerusalem/IL*

In existing tube-based dual-energy CT (DECT), dual-energy protocols must be prescribed prospectively, before the scan is performed, in order to select tube voltage or operate the two tubes at different kVp values. As clinical use of dual energy CT devices expands, radiologists are thus forced to determine in advance cases in which dual-energy analysis may be beneficial, based solely on the indications for study. However, when DECT data is acquired using a novel system designed to enable simultaneous acquisition of high-energy and low-energy data, the radiologist can retrospectively select spectral DECT protocols and reconstruct DECT images after the study has been performed. The system uses a single X-ray tube with dual-layer detector which performs spectral separation at the detector level and not by the X-ray tube. Simultaneous spectral detector CT (SDCT) data can be used to retrospectively generate virtual mono-energetic images at any selected keV in a range of 55-200 keV. The virtual low keV imaging with its increased enhancement capabilities and the high KeV mono-energetic images with reduced beam hardening artifact allow better evaluation of findings. Material decomposition images and Iodine concentration maps allow direct quantification of material concentration. A single contrast-enhanced DECT study can be performed and VNC images can then be generated to simulate the non-enhanced phase, reducing the radiation dose to the patient.
Learning Objectives:
1. To discuss the different techniques of dual energy CT imaging.
2. To discuss the potential added benefit of retrospective spectral reconstruction.
3. To demonstrate clinical applications of spectral detector CT.

12:30 - 13:30 **Studio 2014**

organised by Philips

SY 22

A new era in premium ultrasound

Moderator
J.-M. Correas; Paris/FR

General and paediatric radiology using the EPIQ system
M. Claudon; *Vandoeuvre-les-Nancy/FR*

The EPIQ system is a new generation of ultrasound platform, built around a new precision beamformer and massive parallel processing, resulting in high detailed images, tissue detail uniformity at high frame rates. New probes, such as a curved C9-2 MHz array allow a penetration up to 15 centimeters, maintaining high quality and uniformity of images. In addition to volume imaging performed at high frame rate with matrix probes, panoramic volume imaging can be achieved, extending the possibility to better display the anatomy of organs and lesions. This new system can have direct access to multimodality images, allowing retrieving previous multimodality images for immediate comparison of size, extension and patterns of lesions, and offers the possibility to upload all the reconstructed data to the patient's file. Our first months of daily experience with EPIQ system, in an adult and paediatric population, will be reported and illustrated by cases on abdominal pathology, including liver, native and transplanted kidney, and on vascular imaging.
Learning Objectives:
1. To understand how technology integrated in the new EPIQ system is useful in general and paediatric imaging.
2. To learn about expert's first months of daily experience with EPIQ system.
3. To appreciate the benefits that can be gained by using this new US platform in terms of diagnosis and workflow efficiency.

Fusion navigation: expanding the role of ultrasound in radiology
D.A. Clevert; *Munich/DE*

Current clinical studies have demonstrated the excellent diagnostic performance of contrast-enhanced ultrasound (CEUS) in the detection and characterisation of benign and malignant hepatic tumours in correlation with histology and standard imaging techniques such as contrast-enhanced computed tomography (ceCT), contrast-enhanced magnetic resonance imaging (ceMRI), as well nuclear medicine modalities such as positron-emission tomography (PET) and PET-CT. New developments are based on the 3D or 4D assessment of the microcirculation using CEUS and the acquisition of CEUS images in parallel with images from other modalities, particularly ceCT and ceMRI, using image fusion and volume navigation. Through the use of high-resolution multi-frequency transducers, Matrix transducers and high-frequency linear transducers, the diagnostic spectrum of CEUS is continually expanding. This is also shown in the current, recently published CEUS guidelines for non-hepatic applications, which review several studies and future developments, demonstrating the wide diagnostic spectrum of CEUS. For image fusion a magnetic field generator and a corresponding probe sensor are requested as hardware components. Additionally, dedicated software must be installed on the ultrasound system. The probe sensor is detected by a magnetic positioning system, which calculated the exact position of the sensor in the room. Standard DICOM data sets of all cross-sectional modalities (CT, MRI, PET-CT/MRI) may be used for image fusion. The DICOM data are loaded in the ultrasound system, following which a registration of the datasets takes place. This registration can be performed based on a number of fixed reference points or by plane. After a successful image fusion, the registered MRI or CT image are seen to move simultaneously with the examined ultrasound imaging plane. There is also the option of viewing the registered images either in overlay mode or side-to-side mode. The standards ultrasound options like colour Doppler and CEUS may be easily integrated in the fused images. Thus, the simultaneous assessment of tumour vascularisation and complex vascular pathologies using CEUS in parallel with information from ceCT and ceMRI images is possible. In this symposium new ultrasound technique like image fusion and navigation will be discussed in the clinical settings.

Improved detail resolution in MSK ultrasound using high frequency imaging
C. Martinoli; *Genoa/IT*

14:00 - 15:30 **Room C**

organised by Hologic® The Women's Health Company

SY 23

Breast tomosynthesis: evolution and adoption across Europe

Moderator
A. Smith; Bedford, MA/US

Programme not available by date of print

14:00 - 15:30 **Room E1**

organised by Olea Medical

SY 24

Moderator
S. Pedraza; Girona/ES

Introduction
S. Pedraza; *Girona/ES*

Theory and practice of brain perfusion
A. Davis; *New York, NY/US*

Clinical applications of neuroimaging perfusion
M. Essig; *Winnipeg, MB/CA*

Summary and discussion
S. Pedraza; *Girona/ES*

14:00 - 15:30 **Room I/K**

organised by Philips

SY 25

Addressing today's challenges with next generation digital MR solutions

Moderator
J. van den Heuvel; Eindhoven/NL

Addressing today's challenges with next generation digital MR solutions
J. van den Heuvel; *Eindhoven/NL*

New perspectives on speed and robustness in MRI with Ingenia 1.5T
T. Leiner; *Utrecht/NL*

Learning Objectives:
1. To understand key, synergistic advances in MR scanning hardware and software present on the Ingenia MRI scanner.
2. To demonstrate how these advances can be leveraged to improve image quality of existing protocols.
3. To demonstrate how these advances can be leveraged to improve imaging speed and patient throughput.

Innovations in neuro imaging on the new Philips 3T dStream platform
S. Van Cauter; *Leuven/BE*

The diagnosis and follow-up of patients with gliomas relies mainly on magnetic resonance imaging (MRI). However, routinely used MRI techniques still present many difficulties in clinical practice. Current conventional MRI techniques are insufficient to define glioma grade. Moreover, in the follow-up of patients with glioblastoma, the differentiation between therapy-induced inflammatory reactions and early tumour relapse remains challenging. Currently used conventional MRI techniques do not enable adequate documentation of the nature of the tumoural pathophysiology of gliomas. Advanced MR methods, however, address parameters like diffusion, tissue organisation, blood flow or metabolism, induced by pathology. Therefore, advanced MR techniques potentially provide more insights in the problems encountered with the currently used conventional MR techniques. Diffusion MRI allows non-invasive mapping of the diffusion process of water molecules in a biological environment. Measures of the vascularity of brain tissue, using perfusion MRI, provides markers of blood flow and blood volume in healthy and diseased tissue. Chemical shift imaging (CSI) can be used to study the metabolism of gliomas. For example, CSI provides markers of neuronal density, cell turn over and energy metabolism.
Learning Objectives:
1. To show how these advanced MRI techniques can benefit an accurate diagnosis in brain tumours, using data acquired on a new Philips 3T system with dStream technology (digital coils).
2. To understand how advanced MRI techniques can be combined into a comprehensive acquisition protocol, implementable in clinical practice.
3. To appreciate how the acquired data is conveniently processed with the advanced Philips software.

14:00 - 15:30 **Room L/M**

organised by GE Healthcare Nycomed Distribution LLC

SY 26

Interdisciplinary approach to current issues of abdomen radiology

Moderators
V.N. Kornienko: Moscow/RU
V.E. Sinitsyn; Moscow/RU

Clinical guidelines and practical contrast media usage
I. Tyurin; *Moscow/RU*

Current approaches to evaluation of focal liver lesions
A. Lukianchenko; *Moscow/RU*

Pre-operative imaging in abdominal oncology: what does a surgeon need from a radiologist?
V.K. Lyadov; *Moscow/RU*

Russian radiology best practice: clinical experience sharing
S.U. Kim[1], Y.I. Nerestyuk[1], I.M. Archipova[1], M.V. Vishnyakova[1], A. Surmava[2]; [1]*Moscow/RU,* [2]*Novosibirsk/RU*

Discussion

Please note that the symposium will be held in Russian; simultaneous translation supplied on behalf of the organizers.

14:00 - 15:30 **Room N/O**

organised by Philips

SY 27

Low dose and spectral imaging, a new era in mammography

Moderator
M. Danielsson; Stockholm/SE

Experience of low dose photon counting mammography and spectral breast density measurement
E. Cauzza; *Bellinzona/CH*

Breast density is a risk factor for breast cancer and an indicator for the sensitivity of mammography (masking). A breast density measurement could be a starting point for a personalised screening plan with for example tailored screening interval and choice of imaging modality. Dual energy imaging is today a reference for body composition measurements. Non-contrast spectral mammography brings this technology to breast imaging with potential improvements in accuracy compared to existing image processing based methods. We report on our experience using spectral mammography in our clinical practice and present data on dose reduction and performance indicators of the spectral breast density measurement.

Spectral lesion characterisation: will it be possible to distinguish cysts from solid masses on the screening mammogram?
F. Kilburn-Toppin; *Cambridge/UK*

Non-contrast spectral mammography could potentially be used to better characterise cysts in mammography, and thereby reduce unnecessary recalls based on mammography screening results. We have conducted a pilot study using a photon counting spectral mammography unit from Philips to investigate the feasibility of lesion characterisation. Data from the pilot study have been used to refine the characterisation algorithm and viewing protocol and results are in line with expected values.

Future applications of photon counting spectral mammography
M. Åslund; *Solna/SE*

Photon counting spectral mammography has demonstrated diagnostic performance and dose reduction as well as shown promising results in material decomposition for the purpose of breast density measurement and lesion characterisation. This presentation will outline future potential applications of this unique technology with the aim to further increase diagnostic performance and reduce dose.

14:00 - 15:30 **Press Room**

organised by Bayer

SY 31

The role of FFRCT in the discrimination of ischemia and clinical case review

Moderator
M. Gutberlet; Leipzig/DE

Clinical introduction to invasive FFR and role of invasive FFR in CAD
B. de Bruyne; *Aalst/BE*

FFRCT background and technology
M. Gutberlet; *Leipzig/DE*

FFRCT clinical data and clinical experience
G. Pontone; *Milan/IT*

Live interactive cases
V.E. Sinitsyn; *Moscow/RU*

Sunday, March 9

12:30 - 13:30 **Room C**

organised by GE Healthcare

SY 28

Breakthrough CT and contrast media innovations: game changer for patient care

Moderator
J. de Mey; Brussels/BE

Low dose cardiac CT with 270 concentration isosmolar contrast media: the right choice for image quality and patient care?
D. Andreini; *Milan/IT*

Spectral imaging and Veo: clinical practice and new perspectives in oncology
A. Luciani; *Créteil/FR*

Sharing GE CT vision and future
E. Stahre[1], J.-L. Sablayrolles[2]; [1]*Milwaukee, WI/US*, [2]*St. Denis/FR*

12:30 - 13:30 **Room L/M**

jointly organised by Bracco and Philips

SY 29

Contrast-enhanced ultrasound (CEUS) and trends in technological innovation

Moderator
L. Solbiati; Busto Arsizio/IT

Recent technical innovations in abdominal CEUS
D.A. Clevert; *Munich/DE*

CEUS and new tools for percutaneous interventional procedures
J.-M. Correas; *Paris/FR*

Are we using enough CEUS in clinical practice? Role in radiation dose reduction
P.S. Sidhu; *London/UK*

12:30 - 13:30 **Room N/O**

organised by Bayer

SY 30

Whole body MRI

Moderators
I.N. Pronin; Moscow/RU
V.E. Sinitsyn; Moscow/RU

Skull base meningiomas: how much do we know?
I.N. Pronin; *Moscow/RU*

Brain meningiomas make up the most frequently encountered category of intracranial lesions. Diagnostics and treatment of brain meningiomas are well studied and mastered in neurosurgery. The most complicated group of meningiomas are skull base tumours. The depth of their location, peculiarities of blood feeding and haemodynamics as well as density of the tumour consistency make their neurosurgical resection rather a difficult task. Development and application of new non-invasive evaluation techniques of various pathological characteristics and peculiarities of the tumour tissue such as blood supply (tumour matrix), degree of malignancy, heterogeneity of the blood flow and density of the tumour tissue make it possible to plan surgical access and methods of resection and to forecast possible blood loss and completeness of the resection. DW and DT MRI demonstrate possibilities of differential diagnosis of classical and atypical meningiomas subgroups on the basis of ADC mapping and FA measurements. The use of high-resolution MR angiography on 3.0 T MRI makes it possible to evaluate skull base meningioma arteries' blood supply completely without direct angiography (DSA). Perfusion technologies (CT-, T2* MRI and ASL) demonstrate a high degree of information on the course of assessment of tumour haemodynamics, make it possible to differentiate atypical and typical variants of meningiomas and to forecast the degree of intra-surgical blood loss and peculiarities of tumour haemodynamics in different locations.
Learning Objectives:
1. To become familiar with DWI and DT MRI assessment of tumor degree.
2. To learn about the evaluation of tumor feeding arteries with high resolution 3D-TOF MR- angiography.
3. To understand methods of perfusion (CT, T2* MRI and ASL) for tumor hemodynamic assessment.
4. To compare different CT and MR-techniques data and correlation with surgical findings.

MR-angiography of the body: different techniques and areas of implementation
E. Mershina; *Moscow/RU*

Magnetic resonance angiography (MRA) is a non-invasive method with a high diagnostic accuracy. MRA can be performed as non-contrast or contrast enhanced. Non-contrast MRI can be performed with the help of time-of-flight (TOF) or phase-contrast (PC) pulse sequences. MRA is widely used for imaging of intra- and extracranial vessels, thoracic and abdominal aorta, pulmonary arteries, and renal and lower limb arteries. Magnetic resonance angiography (MRA) of the coronary arteries is still not ready for routine clinical application, but it is under further development and the results of clinical trials in this field are quite promising. For peripheral contrast-enhanced 3D MR-angiography, paramagnetic contrast agent is administered using a biphasic injection protocol at a dose of 0,1-0,3 mmol/kg BW. Gd-MRA can be performed with moving table platform (multi-station Gd-MRA) which allows to get extended 3D datasets of the whole of the thoracic or abdominal aorta and its branches. Several coronal contiguous 40 cm data sets can be collected, each with a 3D gradient sequence, with the total scan time being less than 60s and slice thickness <1 mm. Recently, the technique of non-contrast MRA has been substantially improved (inflow-enhanced MRA). It can be used for example for visualization of renal arteries in patients with a high level of serum creatinine. MRA examinations are technically more demanding than CTA ones. Special attention should be paid to training of the radiographers performing MRA. MRA without radiation exposure is a good alternative to CT-angiography, especially in young patients and in those with impaired renal function.

Endorectal MRI of prostate cancer: do's and don'ts review
S. Morozov; *Moscow/RU*

In the last decade, prostate MRI has moved from research to the clinical area, being fostered by radiologists-protagonists and supported by clinical oncologists and urologists. The concept of functional prostate MRI has rapidly become the standard of care providing radiologists with an effective diagnostic solution. Standardisation of image interpretation by Pi-RADS makes the results easily understood by urologists and oncologists. Implementation of prostate MR schemes mirroring that of TRUS biopsy allows direct comparison of MR results with histopathology. Recently developed ESUR recommendations on prostate MRI have contributed significantly to the wide acceptance and implementation of the technique. Still, many clinicians consider this study suitable only for cancer staging in high-risk patients, underestimating its usefulness for tumour diagnosis and aggressiveness estimation. This report provides an overview of the current prostate MR techniques and best practices (including multi-parametric technique, proton spectroscopy, diffusion-weighted and dynamic contrast-enhanced imaging), performance optimisation tricks, interpretation tips, major pitfalls and recent advances. The ability of MRI to exclude clinically significant cancers will be emphasised. The review will also focus on the role of MRI in active surveillance of prostate cancer and in the diagnosis of recurrent cancer ranging from local to regional and distant. The view of the urologist and radiation oncologist on prostate MRI will also be presented. Finally, whole body MR imaging for the early detection of metastases to lymph nodes and/or bones will be discussed.

Modern MRI: different ways for visualisation and differentiation of the focal liver lesions

G. Karmazanovsky; *Moscow/RU*

Modern radiology allows noninvasively visualising and differentiating focal liver lesions. MDCT and MRI with contrast enhancement are used for the characterisation of blood supply to tumours and in differential diagnosis. Such techniques as ultrasound elastography, MR-elastography, and diffusion-weighted images allow differentiating tumours without the use of contrast agents. Magnetic resonance imaging with liver-specific contrast agents is a most accurate technique for detection of small size liver metastases, assessment of the primary liver tumours, visualisation of a biliary tree, and evaluation of gallbladder function. These techniques help to assess the effectiveness chemotherapy of liver tumours and preoperative assessment of liver resection.