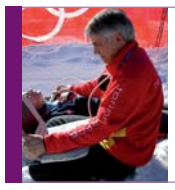
www.gehealthcare.com

ultrasound post

technical development and medical research –
NEWS and FACTS.

2006 / 1st edition **No. 12**

Contrast Enhanced Ultrasound in Solid Liver Lesions. 2



GE´s Olympic Experience at the XX Olympic Winter Games in Torino. 3

The Voluson Club - Unique Service for Voluson Ultrasound Users 4

Volume Ultrasound – Ready for Musculoskeletal Applications

EDITORIAL:

Heinz GLOOR
Vice President / General Manager
GE Healthcare Technologies
Ultrasound & PCD
Europe, Middle East & Africa

Dear Reader,

Since summer 1896 the modern Olympics have been held every fourth year. In 1924 the winter games were established and in February 2006 the 20th Olympic winter games took place in Torino, Italy. Over 2,500 athletes coming from 84 different nations were competing in 15 different disciplines for the medals in gold, silver and bronze, respecting the overall Olympic spirit of peace, fair play and unselfish sharing of joys and emotions.
But the Olympics wouldn't have been what they were without thousands of volunteers and, last but not least, without the sponsors. GE is proud having been one of the Worldwide Partners of the Olympic Games, which is the most important sports event around the globe. In addition to our sponsorship efforts GE Healthcare supported several medical teams of the games with high-end MRI and state-of-the-art ultrasound equipment.
Beside three Logiq ultrasound machines, which were located in Torino, Sestrière and Bardonecchia, there were also three compact ultrasound units, Logiq Book XP and Vivid i, in action for cases of emergency to make first diagnostic, and therefore therapeutic decisions already in the field, which is a unique advantage for the medical team because of the portability of these systems. Both Logiq Book XP and the cardiovascular compact ultrasound unit Vivid i were also used in Olympic research programs to gain insight into techniques to improve the diagnosis and treatment of cardiovascular diseases and musculoskeletal injuries.
One of the physicians who were selected to be part of the Olympic medical staff was the Italian radiologist Prof. Giuseppe Monetti. He is an experienced and renowned specialist in musculoskeletal and sports medicine. We had the opportunity to speak with him about today's approach of ultrasound in the field of musculoskeletal medicine and I want to invite you to read this interesting interview inside of this issue of our Ultrasound Post.
Furthermore you'll find stories regarding GE Healthcare's contribution to contrast enhanced ultrasound, the establishment of our global network of Voluson users – the Voluson Club – and many more facts and information around GE's ultrasound business and the possibilities this wonderful technology brings to patients and medical professionals.

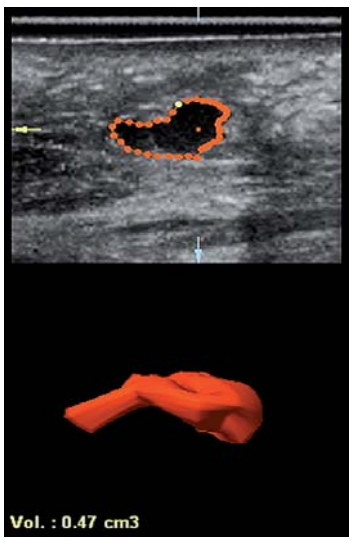
Let's keep the Olympic spirit with us, let's be part of it for a better and peaceful future.

Yours

Bologna, Italy. Prof. Giuseppe Monetti is a radiologist as well as one of the most renowned specialists in musculoskeletal and sports medicine ultrasound in Italy. That's why he has been selected to be part of the Olympic Medical Staff for the 2006 Olympic Winter Games in Torino (Italy). He is one of the first European pioneers to have worked with the LOGIQ 9 breakthrough 2006 and to have gained experience with high frequency Volume Ultrasound in sports medicine and superficial imaging at his practice in Bologna.

ULTRASOUND POST:
Prof. Monetti, you have been working for many years with ultrasound, and the power of your faith in this treatment has resulted in the success of the educational program of your Musculoskeletal Residential School. In your radiological experience, how do you think the ultrasound modality has evolved over the past few decades compared to MR and CT in musculoskeletal applications?

PROF. MONETTI:
During the past decades, the rapid and advanced developments of ultrasound technology have permitted the assessment of a more sophisticated anatomy and the performance of more and more refined pathological diagnoses. Ultrasound has now developed into a fundamental complementary examination component of MR, thanks to the employment of high frequency matrix array transducers and by virtue of fully dynamic imaging with color and power Doppler.



VOCAL - volume measurement of Achilles tendon rupture performed to reconstruct in-vitro Kennedy LAD prothesis

ULTRASOUND POST:
Image quality, productivity, ergonomics.....many features have been developed during the past few years to further increase quality and diagnostic confidence. Speckle Reduction Imaging, Compound Imaging, optimization, etc. What do you feel radiologists are looking for from ultrasound in your application?

PROF. MONETTI:
The radiologist expects to get a more and more sophisticated image resolution from ultrasound technology, with a higher field homogenous imaging, approaching ever closer the sensitivity and specificity of MR, which is today considered to be the real gold-standard in musculoskeletal imaging.

ULTRASOUND POST:
Prof. Monetti, you were one of the first people to experience the Volume Ultrasound technology in musculoskeletal applications. How would you define "Volume Ultrasound" and what are the main procedures that can benefit from this breakthrough?

PROF. MONETTI:
Volume Ultrasound is really impressive. This technology allows a more detailed and complete anatomy assessment, thanks to a third scanning plane (coronal or frontal plane) not available in standard 2D ultrasound imaging. Moreover, navigation within the volume data set as well as the powerful volume calculation package allow the clinician to obtain new information within the study of complex lesions, of primary importance to the surgeon at a pre-interventional assessment stage.

ULTRASOUND POST:
Recent developments have proven that ultrasound is pushing CT and MR development forward. How do you see the role of Volume Ultrasound in radiology and the relation with other leading modalities in future and what are the next challenges you foresee for ultrasound?

PROF. MONETTI:
The new Volume Ultrasound technology takes ultrasound forward as a primary alternative as well as a valuable complement to 3D CT and MR imaging.

Prof. Giuseppe Monetti - member of the Olympic Medical Stuff

My wish is that 4D Volume Ultrasound will develop even more swiftly over the next few years: dynamic imaging is more and more the winning ticket in the search for both a correct and a swifter diagnosis capable of providing a "morphostructural" as well as fully "functional" information.

Improved features with the Breakthrough 2006 upgrade for GE´s Logiq 9:

Contrast Enhanced Ultrasound in Diagnostic and Therapeutic Procedures of Solid Liver Lesions.

GE´s Logiq 9

The improved non-invasive diagnosis, obtained by observing the dynamic characteristics of a lesion during CEUS, or, for that sake, by any other contrast enhanced imaging modality (CT/ MR), has reduced – but not eliminated - the use of US-guided interventions in the evaluation of the nature of focal liver lesions.

Contrast enhanced ultrasonography (CEUS) has become a decisive factor in liver imaging to detect and classify focal lesions. CEUS enables an immediate differential diagnosis between malignant versus benign lesions and seems advantageous compared with contrast enhanced CT in the evaluation of benign liver lesions.

Ultrasonography (US) enables real-time imaging and allows repeated examinations without radiation hazards. Combined with a second generation contrast medium such as SonoVue the GE LOGIQ 9 with the new breakthrough '06 upgrade provides a very strong tool in the evaluation and treatment of solid liver lesions.

Although reduced in numbers, the remaining biopsies become more demanding, and together with the increased use of therapeutic US-guided procedures (i.e. RF ablation, laser ablation, cryoablation) impose new requirements on the performance of advanced ultrasound equipment.

The new breakthrough '06 upgrade for the LOGIQ 9 provides an improved duration of contrast enhancement as well as increased depth penetration by Coded Pulse Inversion and True Agent Detection (TAD). TAD presents a dynamic contrast enhanced image side by side with a dynamic "baseline" grayscale image. Repeated recordings of contrast behavior in a lesion are accessible with the MAX ENHANCE feature. Time Intensity Curves (TIC) provide an easy graphical analysis of the contrast behavior of the investigated lesions (Fig. 2). The presence of a guideline imposed on the TAD image allows CEUS-guided interventions (Fig. 3).

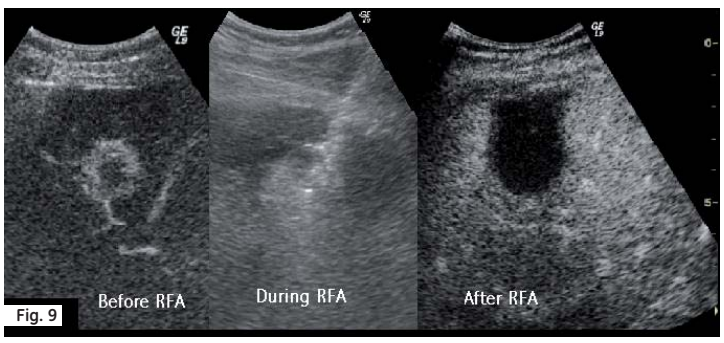


Fig. 9

Fig. 9: US contrast used to guide and evaluate the Radio Frequency Ablation (RFA) of a liver metastasis. Before treatment the metastasis is seen with pronounced enhancement in the arterial phase after i.v. administration of a US contrast medium (SonoVue) . Then, the RF needle is placed in the lesion under US guidance (middle image). Finally, a repeated US contrast examination is performed (right image) detecting no vascular activity in a volume surrounding the lesion. This indicates the lesion has been treated radically.

The benign liver lesion

Hemangiomas vary in the time it takes to present their characteristic filling patterns (Fig. 2). In some cases the patchy, gradual, centripetal contrast filling of a hemangioma requires a long observation time (several minutes). In other cases the centripetal filling is over and done within seconds of the arterial phase (Fig. 3).

The majority of FNH´s presents with a central scar seen as a so called Spoke-and-Wheel (SW) pattern in the contrast enhanced lesion. The finding of a central scar and SW pattern is pathognomic for an FNH (Fig. 4).

Benign lesions of the liver generally appear hyperenhanced in the arterial contrast phase, and isoenhanced in the late contrast phase compared to the background liver parenchyma.

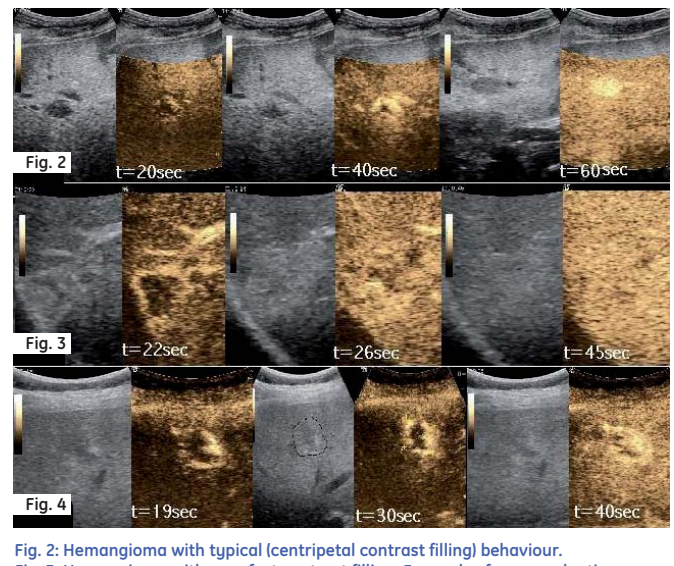


Fig. 2: Hemangioma with typical (centripetal contrast filling) behaviour.
Fig. 3: Hemangioma with very fast contrast filling. Frame-by-frame evaluation necessary.
Fig. 4: Focal nodular hyperplasia presenting with a typical central scar.

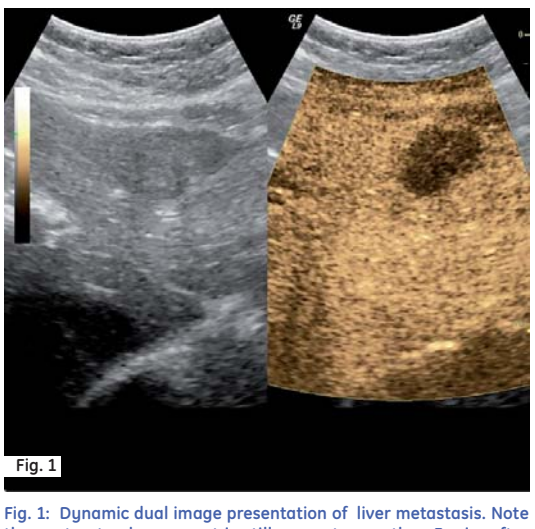


Fig. 1

Fig. 1: Dynamic dual image presentation of liver metastasis. Note the contrast enhancement is still present more than 3 min. after administration af 2.4 ml. SonoVue intravenously. The right image is a conventional US image and the left image presents the TAD (True Agent Detection) enhancement of the contrast medium of the same area.

The malignant liver lesion

The presence of malignant liver lesions leading to therapeutical consequences such as liver surgery, RF ablation or chemotherapy are normally subject to verification before treatment is initiated. Liver surgery may be performed based on noninvasive diagnostic imaging, and biopsy may be reserved to a limited number of cases. In case of nonoperability a biopsy remains mandatory to confirm malignancy before initiation of chemotherapy. CEUS presents the hepatocellular carcinoma (HCC) with a pronounced arterial phase enhancement peripherally and in neovascular structures in the tumor (Fig. 5). Large tumors may be seen with islands of nonenhanced tissue representing necrosis.

Liver metastasis appears - with some variation - hyperenhanced in the arterial phase, compared to the background liver parenchyma, usually with pronounced enhancement at the edge of the lesion (Fig. 6). Both the HCC and liver metastasis typically appear hypoenhanced with scattered vascular activity in the late phase (Fig. 5, 6, 7).

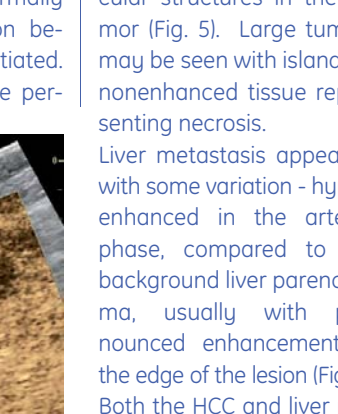


Fig. 5

Fig. 5: Hepatocellular carcinoma.

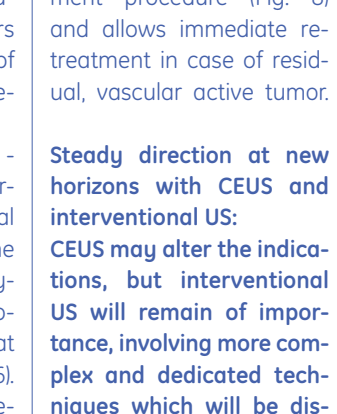


Fig. 6

Fig. 6: Liver metastasis from colorectal cancer. Arterial phase.

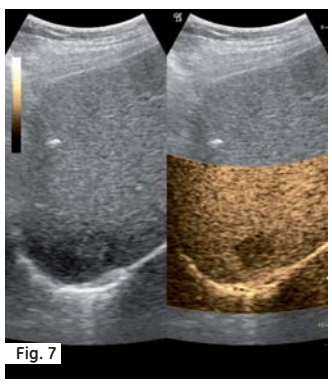


Fig. 7

Fig. 8

Fig. 7 & 8: Same as Fig. 6 in the late venous phase. A biopsy needle approaches the lesion.

CEUS and US-guided tumor ablation

US-guided treatment of non-operable malignant liver lesions are increasingly performed with RF ablation or similar techniques (laser, cryo, microwaves, alcohol injections).

Ultrasound remains the most used guiding modality for these procedures for obvious reasons.

Dedicated devices for US guidance of these procedures are rapidly evolving. CEUS performed before and after the ablation procedure monitors the treatment procedure (Fig. 8) and allows immediate re-treatment in case of residual, vascular active tumor.

Steady direction at new horizons with CEUS and interventional US:

CEUS may alter the indications, but interventional US will remain of importance, involving more complex and dedicated techniques which will be discussed at the upcoming Euroson School of EFSUMB - the 9th Congress of Interventional Ultrasound - in Copenhagen 14-16 June 2006 (www.interventional-ultrasound.org).

On behalf of the organizing committee I'm looking forward to welcoming you in Copenhagen.

Dr. Bjørn SKJOLDBYE
Dept. of Surgical Gastroenterology
Herlev Hospital, Copenhagen University, Denmark

GE Olympic Experience at the XX Olympic Winter Games 2006


Always on site with GE's compact ultrasound devices

On February 10th the XX Olympic Winter Games officially started in the beautiful area surrounding Torino, Italy. Athletes from several disciplines and countries came for the event that counted General Electric as a TOP Sponsor (The Olympic Partner).
In Torino, GE Healthcare was helping to make the Olympic Games sports medicine facilities the most technologically advanced in Games history by providing Logiq Book XP hand-carried ultrasound systems to medical staff at hospitals in Torino, Susa and Pinerolo, as well as a mobile magnetic resonance (MR) unit in the mountains of Sestrière, the site of the downhill ski competitions.
In addition, GE was supplying ultrasound systems to athlete clinics in Torino (Logiq 9), Sestrière (Logiq 7) and Bardonecchia (Logiq 5). Broadcast and print journalists from around the world came to the official GE press conference on February 19th to discover how Olympians were benefiting from GE Healthcare's new systems allowing remote diagnosis that "takes the hospital to the patient", so that the athlete can focus 100% on his sport.
Furthermore, GE Healthcare and the Olympic Committees from the U.S., Italy and China presented a new clinical study executed with a Vivid i system to examine athletes' hearts in an effort to gain new insights into techniques for diagnosing and treating heart disease.
Dr. Dai, Deputy Director of the Medical & Scientific Department of the 2008 Beijing Olympic Games Organizing Committee so aptly resumed how he hopes to partner with GE for the next Olympic Games:
"One world, one dream – let's try to get there together!"
LET'S MEET IN BEIJING.

New Tools in 3D/4D Volume Ultrasound Breast Imaging - Part 1

INTRODUCTION
3D/4D mammasonography is the most recent development in breast ultrasound imaging providing additional aspects to conventional 2D sonography: new superior diagnostic information such as the ability to study a breast mass and the surrounding tissue in 3 orthogonal planes with static VCI (Volume Contrast Imaging), to render a breast lesion with the Inversion Mode in order to characterize the shape and the margins of the lesion and to analyze the three-dimensional vascular architecture with HD-Flow (High-Definition Flow). The 3D ultrasound (US) information transfer is enhanced by TUI (Tomographic Ultrasound Imaging). 4D ultrasound offers almost real-time 3D rendered image information and is taken as a basis of multidimensional imaging of the breast.
Within this issue of the Ultrasound Post I want to introduce two of the Volume Ultrasound features I mentioned above more closely. In the next edition I'll complete the description of these valuable new applications.

VOLUME CONTRAST IMAGING (VCI)
Volume Contrast Imaging is a real-time 4D ultrasound technique which offers thick-slice rendering (6-10 mm slice thickness) or thin-slice rendering (2-4 mm slice thickness). The rendering algorithm is a combination of surface and transparency mode. The Voluson technology offers VCI in the typical 2D ultrasound accessible planes as well as in the coronal plane. The advantage of the VCI technique compared with conventional 2D ultrasound is the contrast enhanced representation of almost isoechogenic lesions compared to the background. As a consequence VCI provides an accurate measurement and safe needle guidance into, for example, an echopoor fibroadenoma surrounded by echopoor fatty tissue.

VCI-C is the preferred technique to study a lesion and the surrounding tissue under 4D related sonopalpation and dynamic 4D investigation. As a consequence of this, VCI-C, for example, is able to support differentiation between a spiculation of the breast mass and an US artifact caused by shadowing, coming up from the borderline between a fatty tissue lobule of mid-echogenicity and the hyperechogenic fibroglandular constituents mimicking a spiculation.
Sonopalpation means to compress and decompress the breast tissue with the finger and to monitor the movements between the different tissue layers with VCI-C. Dynamic 4D US studies present the imaging information, coming up from a circular movement of the transducer under the C-plane aspect of the lesion and the surrounding breast tissue.

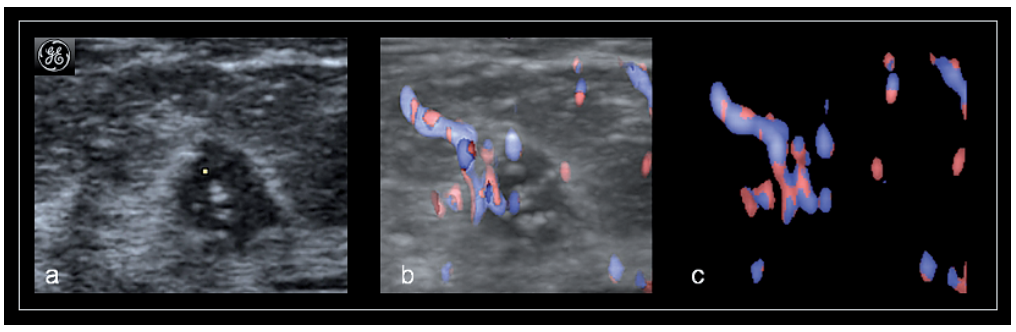


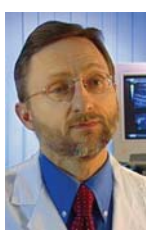
Fig. 1: Invasive ductal breast cancer (6 mm); a: A-plane from 3D US volume, b: HD-Flow with Glass Body Rendering (GBR) presenting the three-dimensional vessel distribution within the volume of interest (VOI), c: 3D angiogram suppressing the grayscale information from b

3D HIGH-DEFINITION FLOW (HD-Flow)
The vascularization of a breast lesion can be investigated using 3D technique with power Doppler (amplitude-based color Doppler sonography) and frequency-based color Doppler sonography. High-Definition Flow (HD-Flow) is the most recent color Doppler technique which, on the one hand, offers a high slow-flow detection comparable to power Doppler and, on the other hand, gives information about the blood flow direction. The neovascularization of a carcinoma with an irregular vascular pattern, arterio-venous shunts and missing vessel autoregulation in contrast to normal breast tissue vessels is the background for many studies with two-dimensional ultrasound and computer-assisted quantitative color Doppler analysis aiming at a differentiation between malignant and benign breast lesions.

The morphological pattern of tumor vessels and tumor feeding vessels is an approach for 3D HD-Flow and 3D power Doppler studies. 3D power Doppler imaging provides the analysis of blood flow and three-dimensional vascularization patterns of the entire tumorous lesion without the limitation of scanning only two-dimensional planes, including the potential problem that the most representative slice might not be scanned. 3D HD-Flow additionally shows the blood flow direction in the three-dimensional vascular architecture.

In combination with Glass Body Rendering the vascular architecture in relationship to the tumor extent and the surrounding breast tissue can be investigated. Suppressing the grayscale parameters a three-dimensional angiogram will be obtained (Figure 1).

3D High-Definition Flow (HD-Flow) volume information offers an effective tool to evaluate the spatial distribution of the vessels inside and outside of the malignant or benign tumor. 3D reconstructions of the color volume data are suitable for studying the three-dimensional vessel distribution and the potential irregularities in vessel shape. In 1997 Madjar and Jellins described the contrast enhancement flow from the periphery to the center of malignant as well as benign tumors by 2D US studies. In that study the carcinomas showed this pattern more pronouncedly, with the malignant neovascularization revealed as having a distinct radiating pattern and a vascular corona, equivalent to the growth zone of the tumor, visible in the echodense rim seen on B-mode US.
Next time I will introduce Static Volume Contrast Imaging, the Inversion Mode and the Tomographic Ultrasound Imaging modality, which are only available with Volume Ultrasound from GE Healthcare.

C.F. WEISMANN, Diagnostic and Interventional Breast Department, Private University Institute of Diagnostic Radiology, St. Johanns Hospital, Landeskliniken Salzburg, Austria


GE runs a unique service for Voluson Ultrasound users worldwide

Welcome to **Voluson**Club.

Last year GE Healthcare sold the 10.000th Voluson 730 ultrasound unit. Reason enough to create a platform for the Voluson user family. And the platform GE establishes for the Voluson community will be the Voluson Club. This club is a service to all users of GE's high-end ultrasound flagship.

The idea behind the Voluson Club is to establish a global network for all Voluson users in order to pool diagnostic capacity from all Voluson specialists, on the one hand, and, on the other hand, to keep you at the forefront of medical and diagnostic research and development by the exclusive, personal benefits provided by GE Healthcare. Voluson Club members will be treated with unique offers and opportunities which will be announced on the Voluson Club website:

www.volusonclub.net.

The Voluson Club headquarters are in Zipf, Austria, GE's Volume Ultrasound center of excellence. Many of the club offers will be global, others will be valid only for the region of potential members. And therefore the global network of the Voluson Club is divided in 5 geographical poles. This guarantees that Voluson Club members will always get the information valid for their region. Besides regular newsletters with information about club actvities and special offers Voluson Club members will be invited to pre-launch meetings, will have access to VIP lounges at congresses and trade fairs and will be hosted at annual Voluson user days.

All these unique benefits will be at Voluson ultrasound users' disposal totally free of charge. And it is not only highly recommended, but also very simple to register for membership at the Voluson Club website at

www.volusonclub.net.

Voluson Club and the possibility to register online will start from the end of March.

Don't get left out – be part of it!

International Academy of Medical Ultrasound DATES for 2006

TOPIC	CHAIRMAN	LOCATION	DATE
DOPPLER MYOCARDIO COURSE - SOUTH AFRICA (english)	Prof. Paul Brink Prof. Hanlie Moolman-Smook	South Africa	20 -21 March
VISUS 3D/4D (english)	Prof. A. Kratochwil	Vienna, Austria	3 - 6 April 26 - 29 June
BREAST ULTRASOUND WORKSHOP (english)	Moharram El Badawi, MD	Cairo, Egypt	8 - 10 April
DOPPLER MYOCARDIO COURSE (english)	Prof. G. Sutherland	London, England	27 - 28 April
ADVANCED VISUS COURSE - BERLIN (english)	Prof. R. Chaoui	Berlin, Germany	13 - 14 May
MAMMASONOGRAPHY (english)	Dr. C. Weismann	Salzburg, Austria	29 June - 1 July

» REGISTRATION: www.SonoPortal.net email: iamu@med.ge.com phone: +43-7682-3800-380

CONGRESSES 2006

2006	LOCATION	DATE
15TH EUROPEAN STROKE CONFERENCE	Brussels, BELGIUM	16 - 19 May
AEPC	Basel, SWITZERLAND	24 - 27 May
ESSR CONGRESS - RADIOLOGY MUSCULOSKELETAL US	Bruges, BELGIUM	9 - 10 June
9TH INTERNATIONAL CONGRESS ON INTERVENTIONAL ULTRASOUND	Coopenhagen, DENMARK	12 - 14 June
HEART FAILURE	Helsinki, FINLAND	17 - 20 June
ANNUAL EUROPEAN CONGRESS OF RHEUMATOLOGY - EULAR	Amsterdam, THE NETHERLANDS	21 - 24 June
ESC 2006 + WORLD CONGRESS	Barcelona, SPAIN	2 - 6 September

GE ULTRASOUND OFFICE ADDRESSES:

AUSTRIA
GE Medical Systems Ultrasound
Donau-City-Str. 6/10, 1220 Wien
Phone: (+43) 1 26016 351
Fax: (+43) 1 26016 300

BELGIUM
GE Medical Systems Ultrasound
Eagle Building, Kouterveldstraat 20
1831 DIEGEM
Phone: (+32) 2 719 7204
Fax: (+32) 2 719 7205

CZECH REPUBLIC
GE Medical Systems Ultrasound
Vyskocilova 1422/1a
140 28 Praha

DENMARK
GE Medical Systems Ultrasound
Park Allé 295, 2605 Brondby
Phone: (+45) 43295 400
Fax: (+45) 43295 399

FINLAND & ESTONIA
GE Medical Systems Ultrasound
Malmin Kauppatie 18
00700 Helsinki
Phone: (+358) 985 606896

FRANCE
GE Medical Systems Ultrasound
Primary Care Diagnostics France
11 Avenue Morane Saulnier,
78457 Velizy
Fax: (+33) 13 449 52-02
General Imaging
Phone: (+33) 13 449 52-43
Cardiology
Phone: (+33) 13 449 52-31
Service:
8, Rue Paul Dautier
F-78140 Velizy-Villacoublay
Phone: (+33) 1-69-18-54-02
Fax: (+33) 1-64 46 32 48
Lunar:
1, Avenue d'Aix en Provence
F-13410 Lambesc
Phone: (+33) 4-42-57-17-97
Fax: (+33) 4 42 57 17 99

GERMANY
GE Medical Systems Ultrasound
Beethovenstr. 239, 42655 Solingen
Phone: (+49) 212– 28 02-28
Fax: (+49)212– 28 02-47

GREECE
GE Medical Systems Hellas
156 Kyprou Av.& 91 Konstantinoupoleos
Str. Argyroupolis, 164 51 Athens
Phone: (+30) 210 9690990
Fax: (+30) 210 9625931

ITALY
GE Medical Systems Italia S.P.A,
Viale Fulvio Testi 280 B
20126 Milano
Phone: (+39) 02 642201
Fax: (+39) 02 64220 347

NETHERLANDS
GE Medical Systems Ultrasound
Cobaltstraat 7
2718 RM Zoetermeer
Phone: (+31) 79 363 1616
Fax: (+31) 79 363 1615

NORTHERN IRELAND
G.E. Healthcare,
Victoria Business Park,
9, Westbank Road,
Belfast BT3 9JL.
Ph. 028 90229900

NORWAY
GE Medical Systems Ultrasound
Tasenveien 71
0873 Oslo
Phone: (+47) 2202 0800

NORWAY
GE Medical Systems Ultrasound
Strandpromenaden 45,
P.O. Box 141, 3191 Horten
Phone: (+47) 33 02 11 16

POLAND
GE Medical Systems Ultrasound
Al. Wilanowska 372
02-665 Warszawa
Phone: (+48) 330 83 00

PORTUGAL
General Electric Portuguesa,
SA. Avenida do Forte, n° 4, Fraccao F
2795-502 Carnaxide,
Phone: (+351) 21 425 1309
Fax: (+351) 21 425 1343

REPUBLIC OF IRELAND
G.E. Healthcare,
Unit F4, Centrepoint Business Park,
Oak Drive, Dublin 22
Ph. 01 4605500

RUSSIA
GE Medical Systems Ultrasound
Kosmodamianskaya nab., 52
113045 MOSCOW

SPAIN
GE Medical Systems España
Avda. Europa 22
(Parque Emp.La Moraleja)
28108 Alcobendas-Madrid
Phone: (+34) 91 663 2500
Fax: (+34) 91 663 2501

SWEDEN
GE Medical Systems Ultrasound
PO Box 314
17175 Stockholm
Phone: (+46) 0855950010

SWITZERLAND
GE Medical Systems Ab
Europastrasse 31, 8152 Glattbrugg
Phone: (+41) 1 809 92 92
Fax: (+41) 1 809 92 22

U.A.E
GE Healthcare Holding
Suite 1101
11th Floor City Tower 2
Sheik Zayed Rd. Dubai, U.A.E
Phone: (+971) 4 3131 207
Fax: (+971) 4 3321802

UNITED KINGDOM
GE Medical Systems Ultrasound
2, Napier Road
Bedford MK41 0JW
Phone: (+44) 1234 340881
Fax: (+44) 1234 266261

IMPRINT:

Publishers:
GE Healthcare
Marketing Department Europe
Beethovenstraße 239
42655 Solingen

Editor–in-chief:
Pierre Radzikowski
gepost@med.ge.com
Tel: +48 2275 14103

Concept and Production:
ICS Media GmbH
A-4860 Lenzing, Austria
E-mail: office@ics-media.at

Printing:
Kroiss & Bichler GmbH & CoKG
Römerweg 1
A-4844 Regau
office@kb-offset.at

300-06-U004E