

Welcome

Dear Colleagues,

It is a great pleasure for me to welcome you all to the 1st Euro – Med Congress for Radiographers.

The idea of organising such event originated during a meeting between representatives of 6 Mediterranean countries four years ago in Greece. These were Malta, Italy, Portugal, France, Greece and Spain. It has been a long four years; but finally we are here. We have received a total of 71 abstracts coming from both sides of the Mediterranean with quite a good number coming from Eastern European Countries. This shows that there was a need for such an event where professionals within the diagnostic and therapeutic fields meet to learn and build contacts.

Although the Congress is titled '*for Radiographers*', we have received registrations from Radiologists, Oncologists, Radiology Nurses and Medical Physicists. With this, we have fulfilled our main objective; ***to set up a multi-cultural, multi-professional network across the Mediterranean basin.*** At the time of writing, we have over 450 registered delegates from 32 different countries.

The scientific program offers 28 hours of lectures and discussions in 12 separate sessions. You are all advised to read all the literature in the congress pack so that you obtain a fully accredited certificate at the end. The certificate will indicate the actual lectures you attended.

Finally, I would like to thank the 9 members of the Scientific Committee for there hard work during the review period and also for their work to come as moderators during the sessions.

Wish you all a successful Congress and lots of networking

Stanley Muscat, (MSc, PgC)
Congress President

Wednesday 7th September 2005

Session 1: Radiography Education

14:00 – 15:00

A. Carena EATON (UK)

Improving Cross-Cultural Understanding of the Teaching & Learning Terminology Used in Radiography Higher Education across Europe

Objective

To achieve a common language and shared understanding of the Teaching & Learning Terminology used in Radiography Higher Education across Europe.

Method

At a meeting of the Higher Education Network for Radiography Education (HENRE), a workshop was organised in which delegates were asked to discuss and agree definitions of words and terms applied to Teaching & Learning in Radiography Education. 57 delegates from 28 member countries of the European Union were divided into groups and given a list of words and terms for discussion. Each group was asked to reach a consensus opinion on a definition for each word and term in the list. An academic facilitator guided each group through the process.

Results

As an outcome of the workshop a Glossary of Teaching & Learning Terminology, as applied to Radiography Education, was compiled. During the workshop the academic facilitator observed the development of cross-cultural team working and was able to reflect upon the skills required to facilitate cross-cultural working groups.

Conclusion

The production of a glossary of terminology will further assist the development of cross-cultural collaboration in Radiography Education by providing participants with a reference point in which to define their own practice in Teaching & Learning. The workshop gave participants the opportunity to develop skills in cross-cultural team working and facilitation.

B. Rossella DELLA DONNE (IT)

Difference Between Didactic Planes of European Universities: A Comparison about Courses of Degree for Radiographers

AIMS:

To make a survey about different formative plans of some samples of European universities, useful basic plans for future interchange among university students.

METHOD:

Web contacts with responsible people of courses of degree of chosen universities.

PROCEDURE:

Tabular comparison among different didactic planes, different credits systems, different methods of hospital training.

OUTCOME: Possible project of interchange among European universities.

Thursday 8th September 2005

Session 2: *Musculo-Skeletal Imaging*

9:00 – 13:00

A. Charbel SAADE (AU)

Pelvic Imaging Interpretation – A Radiographer’s Approach

Abstract body:

This presentation is to allow radiographers to understand the concepts of pelvic imaging in a trauma setting. The concepts include the anatomy, mechanism of injury and types of injuries. These injuries are discussed in reference to associated injuries such as bladder and urethral injuries. This is only small step in creating awareness in the severity and accuracy of diagnosis. This allows to show radiographers the pitfalls in which are commonly missed.

B. Joseph CASTILLO (MT)

Evaluation of the Use of Reformatted Coronal-Obliques, Proton Density, Fat Suppressed, Fast Spin Echo Images in ACL Tears.

Abstract body:

Purpose: The use of coronal oblique images (RCO), reformatted from an optimized proton density fat suppressed fast spin echo (PD-fs) and prescribed parallel to the ACL, was evaluated for ACL tears in comparison with conventional planes. The study also evaluated the image quality of the optimized sequence in the sagittal and coronal plane with two other sequences, the T2* gradient echo (GRE) and Fast STIR.

Methods:

Thirty patients with normal and abnormal ACLs underwent MRI of the knee using the above sequences. The signal-to-noise ratio (SNR) of bone, cartilage, synovium, meniscus and ligament, as well as contrast-to-noise ratio (CNR) and relative contrast (rel con) was measured using region of interest.

Images were subjectively assessed for image quality and demarcation of ligaments and menisci using a 4 point rating scale. Two independent readers evaluated the status of the ACL by the four sequences (protocol A), by including the RCO (protocol B) and the RCO on its own (protocol C). The confidence level for the presence or absence of the ACL tear and its severity were graded by a 5 point and 4 point rating scale respectively. Kappa weighted statistics was used to compare diagnostic accuracy of these protocols.

Results:

PD-fs had significantly better SNR, CNR than T2* GRE but not always better than STIR. Readers preferred the PD-fs over the T2* and rated the PD-fs and STIR as equal for demarcation. Confidence level was better for protocol B (w=0.78) than protocol A (w=0.45) and protocol C (w=0.18). Grading the severity of the ACL injury was very good for protocol B (w=0.81), good (w=0.70) protocol A and moderate (w=0.50) for protocol C.

Conclusion:

The reformatted coronal oblique improved the accuracy in the diagnosis of ACL tears. The optimized sequence could replace the T2* but not STIR

C. Mohammed Fethi LADEB (TN)

Magnetic Resonance Imaging of Spondylodiscitis

Abstract body

Magnetic resonance imaging is the most sensitive method for the evaluation of spondylodiscitis. This imaging technology allows the spinal involvement to be identified at a very early stage and provides macroscopic details of the primary vertebral focus, disc involvement patterns, and pathways of infection diffusion. All this information, when correlated with laboratory tests, may be useful in identifying the infectious agents. MRI also allows an accurate assessment of the disease extension to the paravertebral space, psoas muscle, epidural space etc...

Thus, severe complications can be promptly and fully evaluated.

Finally, this technique may help to differentiate infectious processes from degenerative disorders, extradural neoplastic processes, and rheumatic diseases. We present pyogenic, granulomatous and postoperative variants of spondylodiscitis. Crucial imaging patterns of typical spinal infections are displayed and illustrated.

D. Mohamed Fethi LADEB (TN) Value of MRI in the Assessment of Multiple Myeloma

Abstract body

Multiple myeloma is a clonal B-lymphocyte neoplasm of terminally differentiated plasma cells. Recent therapeutic advances resulted in improved patient survival. Current imaging techniques and in particular bone marrow studies with MRI play an important role in the detection of the extent and location of the disease, particularly in newly diagnosed cases. It is also useful in the detection of associated compression fractures and cord compression and allows a more appropriate choice of the biopsy site.

After treatment, therapeutic effects can be evaluated and the presence of residual disease can be demonstrated by MRI.

E. Pernille JORGENSEN (DK) CT Multi Trauma Protocol

Abstract body:

Time is a very important factor in the handling of the traumatized patient. To give the patient the best care, it is important to do a CT trauma scan. This scan should be designed to give the right diagnosis in the shortest possible time, with the right amount of I.V. contrast.

To reduce the scan time we designed a trauma pillow that will allow us to scan the patient with out repositioning the patient. This pillow gives us the possibility to plan our scan with the help of only 2 whole body scouts. To make this pillow optimal for the scanning of the patient, we designed a new fast protocol for a 4-slice light speed scanner as well.

We clearly reduced our scan time, and we now scan the entire body of the traumatized patient with out changing the position of the patient. The admission of the I.V. contrast is equally reduced to benefit the patient.

F. Aliz TAKACS (HU) Spiral CT Examination of the 18th – 19th Century Mummies

Purpose:

265 naturally mummified individuals from the 18th -19th Centuries were discovered during reconstruction of the Dominican Church of Vác, Hungary in 1994-1995. As a part of the multidisciplinary evaluation of these mummies spiral CT examinations were carried out to determine the possibilities of this non-invasive method.

Material and methods:

CT examination of 33 mummies were performed.. The measurements were carried out on the head, neck and cervical spine using a table speed of 5 mm/s and 5 mm collimation, and on the thorax, abdomen and pelvis using a table speed of 10 mm and 10 mm ray beam collimation. Anterior-posterior and lateral direction topograms of the limbs, bones and joints were made. On the basis of the images obtained, targeted examinations were made, using thinner sections, of any abnormalities which were detected. We made multi-plane reconstructions and 3D surface reconstructions of the skull, bones and face in selected cases. On the CT images we measured morphological data applied in practical anthropological research. We determined the location of organs and lesions for the purposes of focussed biopsy.

Results:

Soft tissue and inner organs remains were recognizable in 23 cases on the CT images, in 10 cases only the bone structure was able to be distinguished. We found 12 considerably pathogenic alterations (degenerative bone lesions,

nasal septal deviation, chronic sinusitis, focal lung disease, kidney stone, testicular hernia) that were precisely localized for further examinations.

Conclusion:

CT analysis can provide important information without making harm of valuable remains. By means of CT images disease can be localised and targeted biopsy with the help of CT scans are only minimally invasive and destructive for the remains.

Session 3 *Specialised Imaging Techniques*

14:00 – 16:15

A. Charalambos BOUGIAS (GE) Theory of Diffusion Tensor Imaging and Fibre Tractography

OBJECTIVES: In this article we discuss the theory on which Diffusion Tensor Imaging (DTI) depends on, how can be used in mapping fiber tracts and its recent applications on studying neuropsychiatry disorders.

METHODS: DTI measures the water anisotropy diffusion using pulse sequences sensitive to microscopic random water motion at several directions (Stejskal-Tanner Formula). Diffusion Tensor Images display and allow quantification of how water diffuses along axes or diffusion encoding directions. This can help measure and quantify a tissue's orientation and structure, making it an ideal tool for examining cerebral white matter and neural fiber tracts. A number of methods for fiber tracking have been proposed to the literature. Methods to reconstruct white matter tracts can be placed into two broad categories, line propagation algorithms and global energy minimization techniques. The six components of diffusion tensor, principal eigenvector and fractional anisotropy colour maps were calculated using data from a healthy volunteer. For fiber tracking a line propagation technique was used.

RESULTS: The results of DTI mapping and fiber tracking are presented.

CONCLUSION: DTI is a magnetic resonance imaging (MRI) variation that may significantly improve our understanding of brain structure and neural connectivity. Its measures are thought to be representative of brain tissue microstructure and are particularly useful for examining organized brain region, such as white matter tract areas. Studies have probed the potential of diffusion tensor MR imaging in brain tumours, migraines, and eclampsia. Improving the gradient and software performance DTI can be used for studying myocardium disorders.

B. Andrej SIRNIK (SL) Basics of Functional MRI

Abstract body:

Functional MRI is based on the increase in blood flow to the local vasculature that accompanies neural activity in the brain. This result in a corresponding local reduction in deoxyhemoglobin because the increase in blood flow occurs without an increase of similar magnitude in oxygen extraction.

Since de-oxyhemoglobin is paramagnetic, it alters the T2* weighted magnetic resonance image signal. Thus, deoxyhemoglobin is sometimes referred to as an endogenous contrast enhancing agent, and serves as the source of the signal for fMRI. Using an appropriate imaging sequence, human cortical functions can be observed without the use of exogenous contrast enhancing agents on a clinical strength (1.5 T) scanner. Functional activity of the brain determined from the magnetic resonance signal has confirmed known anatomically distinct processing areas in the visual cortex, the motor cortex and Broca's area of speech and language-related activities.

Further, a rapidly emerging body of literature documents corresponding findings between fMRI and conventional electrophysiological techniques to localize specific functions of the human brain. Consequently, the number of medical and research centres with fMRI capabilities and investigational programs continues to escalate.

Introduction:

The image quality of a radiograph is determined by the local contrast, spatial resolution, latitude and the image noise. The aim of digital processing is to improve the visualisation of pathology by optimising these physical parameters.

Digital processing is performed to optimally display the information contained in an image in order to improve visualisation of pathology. The goals of image processing are

- to display the full object range,
- to improve local contrast,
- to optimise the spatial resolution of the digital system,
- to suppress image noise.

Discussion:

Appropriate digital processing is able to independently optimise latitude and contrast and is able to partially compensate for a lower spatial resolution of the digital system. However, the choice of image processing is not trivial: by enhancing one image feature, other features may become suppressed. Problems occur when improper processing parameters are chosen that obscure diagnostically relevant features.

In general, a good display of anatomy is not enough. Processing parameters that are optimised for display of anatomy may hide pathology, may increase image noise, or may lead to artifacts. Modern image processing tools try to produce images that have a conventional appearance but overcome the inverse relationship between contrast and latitude.

In clinical practice, the most important effect of digital processing is the constant image quality, independent of exposure dose. In general, no new information can be gained with image processing.

Results:

The advantage of processing is that all information can be perceived more readily, thus leading to a higher detection probability and consequently, higher diagnostic performance of the radiological examination.

Session 4: Maxillo-Facial Imaging**16:30 – 17:30****A. Bostjan KOS (SL)****Dental CT**Abstract body:

Multi-Slice CT is a breakthrough in all fields of Diagnostic Imaging of all parts of the body. It gives us also a new perspective of dental scan because it can provide a very accurate data set. The development of dental CT reformatting programs however, has completely revolutionized and changed the fashion in which we radiographically evaluate the jaw today. Dental CT programs use 1 mm transverse images of the jaw to reformat multi cross sectional and panoramic views. With these views we can demonstrate a variety of pathologies and can also be used for accurate implant planning.

B. Rebecca SANDYS (UK)**CT in the Assessment and Placement of Dental Implants**Abstract body:

With the increasing acceptance of dental implants, there is a greater need for the dental professional to ensure the recipient site for an implant is adequate. The presence or absence of an anatomical limitation should always be confirmed beyond a reasonable doubt.

Conventional 2-dimensional images have limitations as diagnostic tools because they do not convey a 3-Dimensional image. This clinical case is presented to demonstrate the importance of a proper radiological diagnosis during the pre-

surgery phase of the implant therapy. The standard panoramic (OPG) radiograph showed adequate bone height for the placement of the implant, but a CT Scan confirmed the absence of adequate bone volume and height.

Dental implantation is now used worldwide and oral surgeons have come to rely on high quality imaging studies before the performance of this delicate expensive time consuming procedure.

This study demonstrates how a condition such as Ludwig Angina can affect oral health, how the patient can be assessed for implantation, the processes of scanning and finally how the reformatted images can be read to ensure the optimum level of care and suitability of treatment is reached.

Friday 9th September 2005

Session 5: Neuro Imaging

09:00 – 11:00

A. Charbel SAADE (AU)

Neuroradiology – A Radiographers Approach

Abstract body:

This presentation is to allow radiographers to understand the concepts of NEURO imaging in a trauma setting. The concepts include the anatomy, mechanism of injury and types of injuries. These injuries are discussed in reference to associated injuries such as intra-axial and extra axial mechanisms. This is only small step in creating awareness in the severity and accuracy of diagnosis. This allows to show radiographers the pitfalls in which are commonly missed when viewing the simple head ct in a trauma setting

B. Bernardett BAKOS (HU)

Imaging Technologies for the Detection of Cerebral Ischemia – The Radiographer's Aspect

OBJECTIVES:

In Hungary, about 15% of total mortality is caused by cerebral ischaemia. Although MRI is more sensitive than CT in depicting the majority of cerebral pathological states, the detection of ischaemic insults at a very early stage was uncertain with both techniques. The introduction of diffusion-weighted imaging (DWI), however has changed the diagnostic imaging protocols of acute ischaemic stroke. In this paper, we review the diagnostic importance of DWI from the radiographer's point of view.

METHODS:

When the clinical diagnosis of stroke is established, a native CT scan of the skull is performed. If native CT scan shows no obvious alterations, but the patient exhibits significant neurological deficits, an MRI examination is made, including T2 weighted, FLAIR and DWI sequences.

RESULTS:

Based on somewhat different physical properties of tissue water in different brain water compartments, diffusion-weighted MRI is suitable for mapping cerebral ischaemia even after 30-60 minutes following the onset of symptoms. Exact information can be obtained about the localisation and size of the ischaemic lesion and differentiation between transient ischaemic attack (TIA) and permanent lesion is also possible.

CONCLUSION:

The introduction of active stroke management has high priority in our region. The basis for the initiation of active stroke therapy is the rapid and exact diagnosis, where – besides CT scans – DWI plays a very important role.

OBJECTIVE

CT perfusion imaging now is gaining wide popularity and acceptance by physicians and frequently requested for stroke imaging. We aimed to study the status and application of CT perfusion imaging on stroke patients in our facility.

METHOD

Thirty stroke patients were imaged (GE, light speed, USA) first without contrast and then using IV non-ionic, iso-osmolal, 45 ml (350 mg/ml) contrast media injected at 3 ml/sec with 5 second delay through a powerful automatic injector. A cine imager which allows sequential image acquisition, obtained sequential 10 mm slices in 1 sec in sets of four, 45 times through the circle of Willis using a mA of 190, Kv of 80 and a FOV of 25 cm. Parameters like cerebral blood volume (CBV), cerebral blood flow (CBF), time to peak (TTP) and mean transit time (MTT) were calculated and maps were formulated. Differences in perfusions are correlated and interpreted by physicians.

RESULTS

CT perfusion imaging was easy to perform without delay upon request in any time of the day, done within 20 minutes of the request on average. Studies correctly identified the stroke and the results have changed the clinical management of most patients. There has not been any study where the image quality was considered inadequate.

CONCLUSION

CT perfusion was low cost and provided accurate and reliable information in a short period of time. Even in cases where thrombolytic therapy was not considered, CT perfusion identified the patient at risk and had a great impact on clinical management.

D. Christina MALAMATENIOU (UK) Neonatal MR Angiography at 3 Tesla**Background:**

Neonatal Magnetic Resonance Imaging (MRI) is an active area of clinical research. Nevertheless neonatal Magnetic Resonance Angiography (MRA) is a relatively unexplored research area, partly because of technical challenges due to neonatal anatomical and physiological characteristics resulting in poor signal-to-noise ratio. High field MRI has increased signal-to-noise ratio and the potential to become a powerful tool to explore neonatal cerebral vasculature.

Methods:

We used a 3 Tesla Philips MRI scanner and dedicated neonatal MR angiography protocol. 65 infants have been included in this study with a wide range of gestational ages and ages at scan and a variety of neonatal cerebrovascular pathologies. Infants were monitored throughout the scan and sufficient ear protection was provided. When sedation was required, oral chloral hydrate was used. Ethics approval and parental consent were obtained prior to each scan.

Objectives:

To explore the potential benefits of the use of 3 Tesla imaging in improving image quality of the neonatal vessels and to implement these benefits for further clinical studies.

Results:

Neonatal MR Angiography can be used to provide insights to the normal interdependent vessel-brain development and to vascular abnormalities associated with specific neonatal pathologies such as neonatal stroke or hypoxic ischemic encephalopathy. It is also very useful to assess the role of the normal anatomic variations of the vasculature and whether these predispose to specific diseases or have an effect on recovery after an insult.

Conclusions:

Neonatal MR Angiography at 3 Tesla is feasible and provides useful clinical information for normal development and disease.

Session 6: Guest Lecturers

11:30 – 13:15

A. Simon BLEASE (UK)

(Title To Be Announced)

B. Guy JERUSALEM (BE)

The role of PET scan in Oncology: Indications and Limitations

Session 7: General Topics

14:00 – 17:00

A. Rolando FERRANTE (IT)

Technical Optimisation of Bedside Chest X-ray in Digital System (CR) with a New Type of Grid

Abstract body:

Objectives: to reduce the secondary radiation and to optimise the technique in the bedside chest X-Ray using the modern digital system.

Methods:

Starting from the experience with VHC Kodak InSight (asymmetric screen-film system) made in the past in our Institute to optimise the bedside chest radiography before the advent of digital system we have now inserted a new type of grid in five Computed Radiography (CR)-cassette (Kodak Direct View-35x43). Main technical characteristic of our grid are: ratio 3/1, line pairs (lp): 60/cm; focus: infinite, AL interspaces.

Results:

In more than 400 bedside chest X-Rays/month we have repeated less than 1% of the examinations. In one-year experience we tested the absolute lack of technical problem during the processing, the unlimited last of the grid, a non-significant increment of weight of the X-ray cassette, and non significant increment of exposure with a range of 7-8.5 mAs and 75-85 kVp (f-f- distance 130cm).

Conclusion:

Our system increases the image quality of bedside chest radiography and it is characterized by facility of use with very low number of repeated bedside chest X-ray. Furthermore, it doesn't need of a dedicated team allowing to study even patients with trauma injures (chest, bone) or acute abdomen.

B. Michela PIAZZA (IT)

Radio Protection Methods in Angiography Doing Diagnostic Procedure – Our Experience

Abstract body:

Our target is the dose reduction for practitioner undergoing clinical practice in angiography. Our work aims to development these arguments: damage and effects of X-ray, radioprotection instruments, proteximetric methods, dose rate in angiography (phantom and other instruments), radioprotection of patients and staff, methods for research.

Outcome:

Our experience demonstrates that our dose rate and our timing are comparable with the literature one. Radioprotection methods are very important for the reduction of doses in some particular condition of working in angiography. According to our experience is better to work with the x-ray tube in front of the operator instead near him.

Abstract body:

The work spaces of health technicians are various health institutions of which the major one is hospital buildings. When this fact is taken into consideration, the health of the buildings where people work or in other words, the quality of the inhaled air at the closed space life zone directly influences the inhabitants of that workplace.

Depending on their construction specifications and the geographical or climatic conditions they are in or if they are used in ways other than their main functions, buildings can get ill since they become surrounded by a number of contaminants. For this reason, such buildings are defined as "ill buildings". In the event that the building which is under that condition is a hospital building, this is called as an "ill hospital".

As a result of this, 539 radiology employees among which there are radiology experts, technicians and unit secretaries have been studied on, between the dates of March 2004 and February 2005 by a survey that has passed through validity tests to be questioned about their perception as to their workspaces and their health problems they have been feeling or experiencing. Based on the data obtained some suggestions have been put forward to solve some problems regarding the issue.

According to the data obtained, it is recognized that radiology employees may disregard some risks as they have become accustomed to their environment. Results reveal that motivation of the team diminishes in time and that this fact is not known by the employees themselves. Therefore, it is of vital importance that employees in this specific field should be sub-divided into teams and training programs for awareness should be launched and these training programs should be sustained.

For all the reasons above, interactive awareness model programs which have been divided into groups have been constituted for radiology employees.

D. Eija GRONROOS (FI)**Work Organisation and Work Division in Radiographic Departments**Objectives

Aim of the project is to study how work organisation and work division within and between personnel groups and between public health and specialised care radiographic departments is associated with personnel wellbeing, quality of services and costs of radiographic departments.

Methods

The study is based on the principles of action research. The baseline measurements were performed during spring – summer 2005. The development of the new work organisation and work division models will be performed in one municipality during 2006 – 2007. Follow up measurements will be performed at the end of 2007. Baseline and follow-up measures will be performed with the same instruments to see if the intervention will have any effect on the variables measured. Baseline measures: Webb-questionnaire for Finnish radiographic departments (n =10) personnel (n = 162) in two municipalities.

Quality of services questionnaire for non-hospitalised clients over 10 years of age. Information about the personnel sickness absences and work load was received from routine statistics of the hospitals. Information about the quality of radiographic imaging will be collected from the auditing reports of the radiographic departments during autumn 2005. Radiographic departments budget-balance information will be collected in 2007 at the end of the intervention.

Results

The project has just finished its first data collections successfully. Response rate in webb inquiry was 59 %, also the collection of 1000 client responses was performed well in timetable.

Conclusions

The subject has been studied little. In this project we develop a pilot model that can be spread out to other national and cultural contexts.

E. Nergis CEYDELI (TK)

Measuring the Job Satisfaction Level of Radiological Technologists: An Application in Ege University Hospital

Introduction:

Workforce management is of great importance in the hospital. The hospital is a complex organization because of there are many different expert employees. The hospital administrators are frequently faced with job satisfaction problem.

Material and Methods:

There are 48 radiological technologists (RT) in the Ege University Hospital Radiology Department. We have 5 direct graphy equipment, 2 fluoroscopy, 2 mammography, 1 DSA, 1 spiral CT, 1 Multislice CT, 2 MRG, 5 USG and 2 Doppler USG equipment.

In this study, we used Need-Fulfilment Deficiency Index – NDI developed by Porter in 1961. Five requirement dimensions are described in Porter's Model. The questionnaire is applied to all of the RT in our department. Reliability of questionnaire and hypotheses are tested by using SPSS 11.5 for Windows.

Results:

The level of deficiency job satisfaction is 74 for safety requirement dimension, 48 for social requirement dimension, 77 for prestige requirement dimension, 91,5 for autonomy requirement dimension, 85 for realized himself dimension in according to the results of our study.

We determined that the base dimension which radiological technologists feel the lack of satisfaction is autonomy.

Conclusion:

To meet the requirements of employees is of great importance to arrive organizational success. Job satisfaction is a general attitude about personal characteristics and relationships moreover it depends on some variables such as salaries, working conditions, possibilities of career, working relationships, etc. The problem of deficiency job satisfaction is no hardening. The administrators should take account of the requirements of employees and identify problematic points.

Saturday 10th September 2005

Session 8: *Abdominal and Gastro Intestinal Imaging*

9:00 – 11:00

A. Zsuzsanna MOCSARI (HU)

Examining Methods of Body Packers

Objectives:

The aim of this study is to show the most common examining methods of body-packers and results.

Method:

Native abdomen Ct scans and native abdomen X-rays und ultrasonography examination were performed on probably positive patients.

Results:

In last two years we examined 77 patients. Twenty eight positive cases were found, one of them after the examination died in the hospital, because leakage of a capsule.

Conclusion:

Body-packers before travelling swallow 2-3 cm long, 1 diameter capsules, which they hope to retrieve after travelling. The danger of this drug smuggling is the braking or bursting of the capsules, leading to potential fatal drug overdose.

B. Marija SELIC (SM)

Virtual Colonoscopy

Abstract body

Scientific research confirmed that colorectal cancer is the second leading cause of deaths. Several factors as earlier diagnosis, progress in therapeutic interventions and possibly prevention made improvement in decreasing mortality. But the most important factor is screening for colorectal cancer and polyps.

Currently, there are several proposed screening choices, including faecal occult blood testing, flexible sigmoidoscopy, combination of the two, double contrast barium enema and colonoscopy. None of this choices are ideal and all have strengths and limitations. Therefore it's a great pleasure for me to present you a new method, a rapidly developing technology that has a potential to make a major contribution for decreasing the morbidity and mortality from colorectal cancer by its accuracy and sensitivity.

I will present you computed tomography colonography also referred to as a virtual colonoscopy. Computed tomography colonography (CTC) is non-invasive diagnostic method which provides complete examination of the colon, visualisation and detection of all pathology on the colon.

Success of virtual colonoscopy is not possible without this two factors:

I adequate equipment (multi-slice CT with program for virtual colonoscopy)

II adequately prepared patient

PERFORMANCE OF THE VIRTUAL COLONOSCOPY

It is performed in three phases :

- I phase – preparation
 - 1.patient
 - 2.working space
- II phase – examination
 - 1.CT abdomen. in prone
 - 2.CT abdomen. in supine
- III phase – post processing (virtual colonoscopy)

CONCLUSION

Virtual colonoscopy is revolving method which provides successful examination of the complete colon. It is non-invasive and almost not painful for the patient.

C. Elizabeth FEHER (HU)

Comparative Analysis of Two Oral Iodinated Contrast Media

Materials and methods:

We compared two oral iodinated contrast materials, in CT examination of the abdomen and the pelvis. The data from 200 randomly chosen patients were processed objectively and subjectively.

Objectively, we examined the radiation absorbing ability of the contrast materials and also their ability to fill the alimentary canal evenly.

Subjectively, we questioned the patients on their impressions in relation to the contrast materials and also on the side effects which they observed.

We asked them to complete a questionnaire. One of the contrast material is Gastrografin, and the other is Peritrist.

Identical in both:

- amidotrizoat molecule,
- iodine content (300 mg iodine/ ml)
- iodine concentration (60%)

The differences in the carriers:

- in Gastrografin the amidotrizoat molecule is linked chemically to the sodium, and meglumin,
 - in Peritrast the amidotrizoat molecule is linked chemically to the lysin.
- Gastrografin has an aniseed flavoured, Peritrast is herb and tropical fruit flavoured.

Results:

Both contrast materials fill the bowel very evenly, but there were significant differences in respect of the gastrointestinal irritation effect. Sodium has a small molecular weight which is why Gastrografin displays a very significant osmotic effect in the alimentary canal. The lysin is of high molecular weight, Peritrast practically doesn't have osmotic effect.

Conclusions:

Peritrast doesn't have osmotic effect. The hyper osmotic effect of Gastrografin can sometimes be distinctly desirable, but sometimes this is to be avoided. Different osmotic effects and different tastes can help the patients comfort.

D. Dimitris KOUMARIANOS (GE) MR Cholangiopancreatography: Comparison Between Single-Section (2D) TSE, Multi-Section SSTSE and 3D TSE with Respiratory Triggering

Abstract body:

In this study the diagnostic value of pulse sequences commonly used at MRCP are compared and the various technical issues for optimal visualization of pancreatic-biliary disease are explored.

Materials and methods:

All patients in 2004 referred in our department for MRCP imaging were examined with the following three pulse sequences: Single Section Half Fourier Single Shot, Multisection Half Fourier Single Shot and 3D Turbo Spin Echo. All images were evaluated for overall image quality, for image artifacts and for duct conspicuity. Signal intensity ratio and contrast to noise ratio of all sequences were also measured.

Results:

There were 12 (54,5%) female and 10 (45,5%) male patients with a mean age of 66,8 years. ANOVA was used to compare the differences in overall image quality, duct conspicuity, image artifact, signal intensity ratio and contrast to noise ratios between the three sequences.

Conclusion:

3D TSE sequence is the optimal MRCP sequence, which enables operator-independent imaging, large-volume coverage, examinations with maximum patient comfort, and the possibility of data reformation and volume rendering. Unfortunately, imaging time can still be excessive and blurring from remnant respiratory motion hampers results. However because of the short times, it seems prudent to combine it with both 2D and MS breath-hold sequences to capitalize on the relative advantages of each.

A. Zoran MILOSEVIC (SM)**CT in Radiotherapy Planning and Applications**

Computed tomography (CT) is referred usually as diagnostic method for detection and staging tumors and follow up effects of the therapy. In this review paper all other applications of computed tomography in radiotherapy has been given.

The first clinically applied CT-EMI Limited Middlesex was constructed by the end of 60-ies. Its inventors were physicists Cep Godfrey Hounsfield and Allan Cormac, who enormously contributed the development of the CT method for the image reconstruction. For that effort they were awarded a Nobel prize for physiology or medicine on the December 8th 1979. in Stockholm. In his inauguration address Hounsfield considered application of CT in radiotherapy. It is less known that the first CT's have been constructed in Russia in 1958. Hounsfield himself modestly, has never took credits for the invention of the CT and has always claimed that he had succeeded due to his good collaborators.

Quick scientific and commercial CT development in 80's, brought expensive and sophisticated equipment with excellent space and densitometric resolution. This equipment have usually been used in diagnostic purposes and only occasionally in radiotherapy planning.

The most important reasons for CT transversal sections application in radiotherapy are: for detecting the position of a tumor and their relation to adjacent tissues and organs, for detecting radiation field size and orientation, to protect risky organs in the tumor's neighborhood and to correct the ray attenuation according to the referred tissue density.

From the early 80 ies at our department started the application of CT's in the therapy planning. At the beginning the stripes were used for data entering into system for twodimensional radiotherapy planning *TIPS PHILIPS*. Since 2000 in clinical use is digital linear accelerator SLi ,ELEKTA with multi-lamellar collimator with electrical portal imaging , system for radiotherapy planning *PRECISE PLAN* and additional option for stereo-taxis radiotherapy *LEIBINGER,s* Mask system and STP system for therapy planning.

The CT transversal plane sections are ideal for radiotherapy planning for the tumor detail description and adjacent organs and body contour, what is essential for the absorbed dose calculation. CT diagnostic procedure has to be done under the same geometric conditions as the radiation.

Immobilization and fixation devices present occasional technical problems, preserving the patient centrance in the CT bore hole. Recent contemporary CT-ies have wider hole measuring even 70 cm and the new CT machines specially designed for radiotherapy (AcQsim with hole 85 wide and FOV/60cm).

B. Mirela SVETEC (HR)**Total Body Irradiation – Zagreb Method**Background and purpose:

Total body irradiation (TBI) is a conditioning method (together with chemotherapy) for the treatment of haematological malignancies prior to bone marrow transplantation. We describe technical aspects of Zagreb TBI method, which has been developed and performed over last 20 years (about 400 patients).

The method:

Zagreb TBI uses conventional Co-60 unit and large (4.20 m) source-patient distance. A fractionated TBI regimen is 12.45 Gy in three fractions over three days. Due to large source –patient distance and low mid-plane dose-rate (6-2 cGy/min), shielding of lungs is not necessary. In the core of the method is a mathematical anthropomorphic model man, which can be scaled to dimensions of the actual patient. Input parameters are patient's dimensions at ten locations together with entrance and exit doses at these locations, absorbed in some reference time.

Original software can then calculate doses at different locations inside anthropomorphic model. Reliability of the method can be tested using plastic humanoid phantom filled with water. During irradiation, in-vivo dosimetry is performed at ten locations on actual patient, giving entrance and exit doses. For this we use 12 p-type semiconductor diodes with Vivodos (PTW) dosimetric system. Whole in-vivo dosimetry system has to be calibrated for the use in TBI conditions. Calibration is performed in TBI geometry.

Conclusion:

Original Zagreb TBI method based on Cobalt source, large source-patient distance, in-vivo dosimetry and elaborate mathematical software, has accurate dose delivery and absence of interstitial pneumonitis, and has in general very good results in overall treatment.

C. Andrea FARKAS (HU)

3D Conformal Boost Versus Electron Boost in Early Stage Breast Cancer

Purpose:

In the adjuvant treatment of early stage breast cancer whole breast radiotherapy (WBRT) followed by boost irradiation to the tumour bed is the standard of care. Several publications examine the different techniques of boost irradiation and their impact on local tumour control. Our objective was to compare 3 D conformal photon boost with direct electron boost in terms of different volumetric indices and lung sparing.

Methods and Materials:

In this retrospective study 38 patients with early stage breast cancer were included. All patient underwent breast conserving surgery, followed by WBRT with (28 pts) or without (10 pts) regional lymph node irradiation. 22 patients received adjuvant chemotherapy and by other 28 patients were treated with hormone therapy. Both WBRT and boost irradiation were based on exclusively computer assisted 3D treatment planning. The definition of tumour bed was based on pre- and postoperative imaging studies (CT, mammography) with the help of metal clips. Retrospectively virtual electron boost was planned on all patients. For comparison of the different plans volumetric indices, including coverage index (CI), conformality index (COIN) and external volume index (EI) were evaluated. The 2 Gy dose receiving (V2) lung volume were also examined.

Results:

The average GTV volume, GTV-skin distance were 56.18 cc (9-115) and 3.36 cm (0.84-5.25) respectively. Statistically significant differences ($p < 0.001$) were found in terms of CI (photon mean 0.971 vs. electron mean 0.429), COIN (photon mean 0.330 vs. electron mean 0.148) and EI (photon mean 2.1 vs. electron mean 1.188) in favour of 3 D conformal boost. Similarly, significantly less ($p < 0.001$) lung V2 could be demonstrated with planned photon than with direct electron irradiation (photon mean 41.26 cc vs. electron mean 131.507 cc)

Conclusion:

3D conformal boost seems to be superior to direct electron boost in the complex adjuvant radiotherapy treatment in early stage breast cancer, since it could provide better target coverage with significantly better lung sparing. Local tumour control and late toxicity data are awaited.

Session 10:

Cardio Vascular Imaging

14:00 – 15:30

A. Daniel VELDRICH (CZ)

CT Examination of the Heart

Abstract body:

In current time in dependence to advanced technologies of health imaging are incoming new examinations. The one from them is CT examination of heart.

At present we are able with use of 16 rows MDCT to do examinations of heart for different diagnosis and indications, with imaging of different anatomical structures in heart and his surroundings. We are able to do examinations with or without application of contrast media, with very good quality of sequent images.

With modern generation of CT - MDCT we can do CT examination which were not possible to do in time before.

B. Uz HUSEYIN (TK)

The role of Interventional Radiology Technicians to Perform Carotid Angioplasty

Purpose:

We assess the role of interventional radiology technicians during carotids angioplasty

Material and Methods:

Fifty consecutive NASCET-ineligible patients with 60 carotid artery stenosis underwent protected carotid artery stenting. The team included two interventional radiologist, two technicians, and two nurse. During the procedure two technicians had responsibility to prepare all equipments and support the team. These highly talented technicians gave incredible support to interventional radiologist.

Results:

Our procedure was technically successful. There were no procedure related that two minor strokes. Additionally one transient systolic and one persistent bradikardi were seen. In terms of duration of procedure and handling all complications interventional technicians had very crucial roles.

Discussions:

Interventional radiology team should include at least one interventional technicians. This can improve the efficacy of interventional team in terms of handling of huge amount of patients.

C. Muslihudin BUKVI (BH)

The Significance and Role of CT Angiography in Interventional Radiology

Abstract body:

Technological development has important role in the field of radiological diagnostics in the last decade.

CT angiography becomes most important noninvasive method in diagnostic of the blood vessel diseases. It is used in diagnostic, treatment planning and follow up of the treatment options.

The choice of appropriate protocol parameters in combination with automatic injector is crucial for proper imaging.

The goals of this article are:

- description of CT angiography
- description of possibilities of CT angiography
- description of hardware and angiography tools
- the role of the engineer of medical radiology in CT angiography

Conclusion:

CT angiography becomes most important diagnostic method for noninvasive diagnostic of diseased blood vessels.

Session 11: *Genito-Urinary Imaging*

16:00 – 17:30

A. Fabio MARCONI (IT)

Uro-Angio-Functional-Minzionale

Abstract body:

The study of the urinario apparatus in toto, demands generally uses it of piu' methodical that in several combinations between of they, carries to the characterization of eventual parenchimali or ostruttive lesions of the eccentric ways; Retrograde, Ecografia, Urografia, Scintigrafia, Pielografia, Cistouretrografia and minzionale-arteriography-T.C.

The proposal of a protocol of total study in one seated only e' one varying of study much tempting one for the urologi. With possible the Magnetic resonance e' in one seated only to obtain all the information that they can give the techniques on described to us.

Materials and Methods:

We used a Tomografo RM Philips 1,5 Tsl (Entire) and Siemens 1,5Tsl (Vision) with coils Body and Synergy Body, dedicated for the study of the abdomen. In the 2 years of experience the technique e' be adapted to the various requirements. Have been study patients to you of eta' comprised between 1-80 years, with pathologies of every tipo;Litiasi, Neoplasie, Syndromes of the advanced joint, non-specific Idronefrosi, Stenosis.

Conclusion:

Uro-Angiorm-Funzionale-Minzionale, putting to comparison with the traditional techniques, e' turned out of total affordability', semplicita' interpretative,and insufficient invasive.

B. Nathalie KIEUSSEYAN-TRIAIRE (FR)

Imaging the Vesico-Uretric Reflow (VUR)

Abstract body:

The vesicouretric reflow (VUR) is the most frequently uropathy on child. For these reason we think to make a break point about the radiological arsenal on VUR. Before a physiopathologic refresh we will talk about the importance on discuss between technician and patient. for the best result of the exam a good cooperation is mandatory.

The diagnosis and evaluation of this pathology need different modality of investigation:

- Ultrasound
- Standard radiology
- Scintigraphy
- Magnetic resonance

Every technique have specific characteristic, and we will discuss about it (irradiation, diagnosis interest,...) integrating nosocomial risk.

C. Stefano SANTUCCI (IT)

MR of the Prostate Gland

Abstract body:

Prostate cancer is going to have an increasingly important role in relation to the extent it affects life expectancy in the male population. Even though the study protocols to screen for tumour appearance at the level of the prostate gland are well defined, a consistent and uniform interpretation of the patognomic signs is not always achieved.

The x-ray and ultrasound diagnostic imaging have allowed a broad spectrum of modalities aimed at screening for cancer diagnosis and follow the disease progression. CAT scan has not provided clear support differentiating normal from abnormal gland tissue, but is an excellent tool for staging and follow-up. At the same time the progress with MRI development, capable of showing very accurate details of the prostate and pelvic region, especially its 3-D definition, has made the image interpretation feasible to physicians other than radiologists.

In the attempt to apply a common physical principle in MRI, endorectal coils have been introduced in practice, conformed to allow the closest contact to the prostate, target very important to achieve the best signal-noise ratio. This approach brought some obstacles regarding patience compliance and image quality. A more recent trend has shifted to externally placed coils, positioned over the skin that, after a careful tuning of the sequence parameters, are capable of better results both in quality terms and for the less invasive and disruptive approach to the area under examination.

The presentation will deal about the comparative evaluation of the above mentioned techniques and more specifically about the surface coils MRI.

Scientific Posters

1. Nuran AKYURT (TK)

Chest X-ray: Repeat Exposure Rates and Reasons

Abstract body:

Summary: In this study, we aimed to find repeat chest X-ray film rates and repeat causes in 4 major state hospitals in Istanbul. We admitted all the chest X-ray examinations in the polyclinic sections (excluding emergency service) of the 4 major state hospitals. Every chest X-ray film, repeat film and the repeat cause was recorded at the end of every workday. Repeat causes are classified as patient originated, technologist originated and machine originated.

Number of chest X-ray film taken during our study is 9254. Number of repeat film is 249. Hence, repeat rate is 2.69%. Number of repeats for patient originated causes is 142 (57.0 %), number of repeats for technologist originated causes is 81 (32.5 %) and number of repeats for machine originated causes is 26 (10.5 %).

Patient originated repeat causes are movement and foreign body. Number of repeats for movement is 78 (31.3%) and for the forgotten foreign objects is 64 (25.7 %).

Technologist originated repeat causes are faulty contrast, faulty cassette/film/collimation choice and faulty developer. Number of repeats for high contrast film is 29 (11.6 %), for low contrast film is 26 (10.5 %) for wrong cassette/film/collimation is 17 (6.8 %) and for faulty developer solution is 9 (3.6 %).

Machinery originated repeat causes are divided as x-ray machine originated and developing machine originated. Number of repeats for x-ray machine originated causes is 13 (5.25 %) and for developing machine originated causes is 13 (5.25%).

2. Bostjan GAJSEK (SL)

Reject Film Analysis at the Emergency Department – Clinical Centre Ljubljana

Abstract body:

Radiation protection and the quality control have become very important in our vocation. The level of our education is unique in medical profession and very widely based. The radiologists are the experts who are in daily contact with radiation, either in the process of diagnosing or treatment. We are aware of the consequences of overexposure to radiation. Therefore we do not view a damaged part of a human body as an object exposed to radiation, but we treat a human being as a whole, with respect to all ethical and moral principles, as well as those connected with the radiation protection.

The quality of our work is shown in following way: the check-up and later on the treatment must follow the rule of optimality, i.e. a patient must be exposed to the minimal and yet still effective quantities of radiation. The exposed part therefore receives the optimal radiation dosage, while healthy tissues in the surroundings are exposed as little as possible.

The primary goal of the analysis and systemization of the reasons for re-exposure is to obtain data and knowledge needed to set up a system that prevents the same mistakes from happening again and again. The patients are no longer exposed to the radiation if not necessary; the quality of pictures is much higher, we gain more approval from the side of professional and broader public, and last but not least, the costs can also be cut down due to fewer unnecessary repetitions of the check-ups.

3. Akyurt NURAN (TK)

Meaning of Time from Radiology Department Employees Point of View and Effective Time Management

Abstract

In this study we aimed at finding out of meaning of time from radiology department's employees point of view. The study was carried out between February-July 2004; in İstanbul. The study was performed using face to face method, in 15 different hospitals. (State owned and private).

Of those who participated in the research 60% were women, 41% were between the age of 25-29 years, 55% were high school graduates, 54% were married, 67% were radiology technicians, 7% were working in the department for 1-5 years; and 38% were working in state hospitals.

When we considered the mean average points of time management factor (variable), habits accounted for 3.59, 2.59 were environmental, 2.94 was effects of working condition. The general average point was 3.36. In conclusion we found that individual's habits affected their way of time spending, in the variant analysis and "T Test" that was done in independent groups. It was found that for effective time management habits and other variables should be adjusted according to time usage; so that the quality is increased.

4. Nilgun HASMAN (TK)

The Interventional Radiology Team: Important Role of Radiographer in the Procedures and Radioprotection

Abstract body:

Purpose: Radiological interventions became primary therapy methods in many different vascular and non-vascular pathologies; such as vascular steno occlusive diseases, tumour therapy, bleeding therapy. Interventional radiological procedures are best performed by a dedicated team of interventional radiologists, technologists and nurses. Our aim is to present the ideal working method for members (especially radiographers) of this team and unavoidable rules of radioprotection.

Methods:

At Ege University Hospital, the Interventional Radiology Department Works largely independently from the rest of the Radiology Department. Yearly about 3700 interventional procedures performed. Radiographers are responsible for preparation of patients and materials, contrast media automatic injector, vital functions monitoring, radio protective shields and doses reduction protocol and software in DSA unit.

Results:

Interventional radiology technologists should spend all of their time in the field of intervention. The complex procedures performed by a dedicated team are safe with lowest complication rate, quick and easy. The technologist's knowledge of radiation protection, and awareness of practical shielding devices makes procedures safer for patients and interventional team.

Conclusions:

Radio technologists working in interventional radiology department should receive specific training covering details of technique and instrumentation, pre and post procedure patient care, sedation and other related matters and especially radiation protection. "Interventional radiology technologist" play an important role in efficiency of the department.

5. Vanda PREBIL ZARGI (SL)

Presentation of Clinical Radiology Institute-Ljubljana

Abstract body:

PRESENTATION OF CLINICAL RADIOLOGY INSTITUTE RADIOLOGY IN LJUBLJANA, WHICH OPERATES AS A DEPARTEMENT OF CLINICAL CENTER LJUBLJANA.

PRESENTATION OF THE NUMBER OF EMPLOYED SUCH AS MEDICAL STUFF AND OTHER EMPLOYERS (ADMINISTRATION WORKERS, SCRUB NURSES, PHOTOTECHNICIANAS, CLEANERS) AND ALSO ARRANGEMENTS FOR DIFFERENT DEPARTMENTS, LIKE: STERIL AND UNSTERIL TRACTS, NEW TECHNOLOGIES, EMERGENCY, OUTPATIENT CLINICS...

6. Biljana SOVILJ (SM)

Computerised Tomography

INTRODUCTION

Computerized Tomography (CT) is a radiological examination method, whose basic conceptions were theoretically described by G.Frakl in 1938, and owing to A.McCormack and G.Hounfield the first CT –Mark 1 was created in the EMI Company in 1972, which was first used at the Mayo Clinic in 1973. Since then a great number of experts of different profiles have continually worked on the improvement of the technical characteristics of this unit. The results of such a work are more than visible, as during the period of thirty years, the quality, speed, precision of the examination and image resolution have been improved many times. Considering the wide – range use of CT everyday clinical work, the objective of this paper is a review of the history and the development trends of this significant diagnostic procedure.

DISCUSSION

The CT operation is base on the principle of the measurement of the intensity of the attenuation of the X – rays passing through the part of the body being scanned. A narrow, collimated X – ray beam id emitted by a moving X-ray tube, and the intensity of the attenuation of the X – rays is measured by detectors.

Electrical signals obtained at the detectors are translated into digital ones and processed by a computer, which organizes them into matrixes, i.e. latent images. The acquisition of the image is a mathematical process (Fourier analysis) which produces two – dimensional distribution of linear attenuation coefficients, and than the degree of the darkening is determined for each matrix element, which is then projected on the monitor screen.

The first – generation CT units had only one detector, a system with an X – ray tube moving both trans – laterally and rotationally, and the scanning of one section lasted about 5 minutes; the second – generation units had a grater number of detectors, while the third – generation units had 700 detectors mounted on an arch, and the movements of the X – ray tube was rotational, in a full circle, coupled with the detectors, which shortened the scanning of a section to about 10 – 15 s; the fourth – generation CT units have a grater angle of the ray beam, a significantly larger number of fixed detectors arranged in a circle, while the tube moves within the detector circle. The spiral scanners, whose technology was developed in mid eighties of the last century were a new dtep forward – the technological development have enabled that the tube moves continuously within 360 degrees, thus, with the synchronized movements of the diagnostic bench, obtaining information from whole anatomical regions within 20 – 30 s. The multidetector CT enhanced with a grater number of detectors, arranged in a number of rows (2,4, 16, 32, 64), enabling also the examination of the vascular structures of the hearth, with quality multiple 2D and 3D acquisitions.

CONCLUSION

Computerized Tomography is a powerful diagnostic method that is a being further developed and, owing to the technological development, its indication area hasbeen constantly expanding.

7. Cesar GARRIDO ARRIBAS (SP)

Functional Magnetic Resonance Imaging

GOALS

Functional magnetic resonance (fMR) is a image technique that allows to detect cerebral activation during various tasks performances and study which cerebral areas are involved.

METHOD

For optimal acquisition is very important to avoid cranial movement during the study. The patient must be instructed previously with the task that must carry out during the exploration because is essential the correct execution for obtained good results.

The paradigm used vary depending on the cerebral area that we want to activate:

- Stimuli (visual, sensitive).
- Tasks (language, motorboats, memory).

The sequence (EPI GE) is launched simultaneously with the stimulus that is combined with periods of rest (baseline). Usually the baseline period will be the first. The duration of the acquisition varies according to the number of images performed during the task or the baseline period, and the times that this cycle is repeated.

The images obtained have to be processed using the manufacturer software and superposed to an anatomical image.

RESULTS

Activation areas can be observed in different cortical areas, depending on the paradigm used for motor tasks contralateral precentral area is activated, for language predominance usually the left hemisphere is more activated. Pre-surgical information about relation between eloquent areas and lesion to remove can be reported using this technique.

CONCLUSIONS

fMR technique provides a functional information of the brain that can be used to prevent or reduce postsurgery secondary damage in patients who undergo brain surgery.

8. Stefano SANTUCCI (IT)

CT Dentascan

Abstract body:

The utilization of a clearly valuable and increasingly adopted technique requires important technological innovations. The proper patient positioning, the selection of appropriate exposing dose, the reproducibility pre and post implantation are essential conditions to perform a technique correctly.

All these factors, as well as the diagnostic requirements of the implantologist, require from the technologist a specific knowledge and professionalism. The functional optimization of the radiological device is an exclusive duty of the technologist. An adequate training and competence is essential to become an indispensable support to the radiologist and implantologist.

The constant CAT scan evolution and implementation make indispensable a careful evaluation of the CAT scan structural and functional features and questioning if the multislice technology has actually introduced a clear improvement in Dentascan and maxillo-facial district evaluation.

9. H Ibrahim OZDEMIR (TK)

Solitary Pulmonary Nodules: Evaluation of Benign / Malignant using Dynamic CT

Abstract body:

Thirty patients with non-calcified Soluter Pulmonary Nodules were studied. All patients were examined before and after intravenous injection of contrast material. 100ml contrast medium which contains 300ml Iopamidol, with injection ratio of 4ml/sec. was injected. After the contrast injection, scans through the nodules were obtained at 1, 2, 3, 4 and 5 minutes.

Scan thickness; 2mm, interval; 4mm (pitch 2) and reconstruction interval; 1mm were determined for scan parameters. It was determined that; the increase of contrast enhancement pattern on solitary pulmonary nodules, above 15 HU were malign, however nodules below 15 HU were benign. As a result, it was obtained that the ratio of true diagnosis was above 90%(28 of 30 patients).

10. Daniela INCERTI (IT)

Imaging of Abdominal Aortic Aneurysm for Stent Implantation

Abstract body:

This study is performed with 1 Tesla (1T) Magnetic Resonance (MR) Siemens. 3Dimensional (3D) contrast enhanced (c.e.) sequences are used, repeated before and after the administration of paramagnetic contrast medium, in order to obtain final images that allow the working out of various transversal and longitudinal measurements for the percutaneous abdominal aortic stent implantation.

11. Attila HEGEDUS (HU)

The Sonographers' Role in Carotid Dulpex Scans

Goal

To demonstrate the international method for performing carotid artery duplex ultrasound (US) as implemented in our Institution. Highlighting the main responsibilities and techniques of the sonographer while at the same time clarifying competencies of the sonographer.

Method and Results

Demonstrating the steps of the carotid artery US in our Institution in comparison with the international standards through 3 years of experience using GE LOGIQ 400 US.

- Provide in detail the optimal examination parameters used at our institution.
- Describe possible errors when performing US.
- Show the mandatory imaging planes and views as required by the professional bodies as well as the criteria for writing reports and performing all necessary documentation.

Conclusion

The majority of US scans in Hungary are still performed by doctors. The presence and work of sonographers is still new in our still evolving Healthcare System. The increase in demand, crowded clinics, long waiting lists and specialisation in radiology is forecasting a major role for the sonographer for the near future.

One of the biggest potentials for Hungarian Sonographers are the well standardised vascular examinations. The majority of the radiologists in our institution accept our competency and appreciate our contribution in vascular examinations.

The recently formed 1 year training program for Sonographers in Hungary is a major step forward in the modernisation of Radiography Training in Hungary, providing scope for specialising and continuing our professional development.

12. Ivana VOLKOVA (CZ)

Imaging of CABG by MDCT

Abstract body:

MDCT cardio angiography is one of the most recent developments in cardiac imaging. With the last generation of CT scanners we are able to make examination and imaging of coronary arteries, anatomy of heart and as well coronary arteries bypass grafts.

This procedure can display patency of coronary arteries or bypasses, their presence, stenosis or occlusion with very high degree of reliability.

13. Gul ASLANTURK (TK)

Assessment of 3-Dimensional Rotational DSA

Abstract body:

Purpose: To evaluate the utility of three-dimensional (3D) rotational digital subtraction angiography (DSA) in addition to two-dimensional (2D) DSA in the assessment of intracranial aneurysms and review the technical parameters of rotational DSA.

Materials and methods:

110 patients and 125 aneurysms were evaluated with 3D DSA as a supplement to 2D DSA by using Adventx digital angiography machine (General Electric). 2D DSA was performed in two to five standard projections. Maximum intensity projection (MIP) and volume rendering images were created from rotational DSA data sets. All images were assessed for number, presence of aneurysm, presence of aneurismal lobulation, visualization of aneurismal neck, and relationship to adjacent vessels.

Results:

In one patient, an additional aneurysm was seen by 3D DSA. Aneurismal lobulations in 23 patients were seen, aneurismal neck in 45 patients and relationship of aneurysm to adjacent vessels in 34 patients were detected properly by 3D DSA. Image quality of 3D DSA was inferior to that of the standard 2D DSA for visualization of distal arteries.

Conclusion:

Compared with 2D DSA, 3D DSA provides more detailed information in the assessment of cerebral aneurysms. Performing 3D DSA is an easy method.

14. Rossella LULLI (IT)

Imaging for Studying of Abdominal Aortic Aneurysm with MR

Abstract body:

IMAGING FOR STUDYING OF THE ABDOMINAL AORTA WITH RM FOR ENDOLUMINAL TREATMENT OF ABDOMINAL AORTIC ANEURYSM.

OUR EXPERIENCE WITH RM HARMONY 1T SIEMENS.

15. Zdenek PULDA (CZ)

Percutaneous Trans-Catheter Aortic Valve Prosthesis Implantation: An Experimental Feasibility Study: From Aortic Valve Wars: Episode IV: A New Hope

PURPOSE:

Over the past 30 years there have been experimental efforts at catheter-based management of aortic valve regurgitation with the idea of extending treatment to non-surgical candidates. A catheter-delivered aortic valve design is described and its efficacy tested in animal experiment.

METHODS:

The new catheter-delivered valve consists of a stent-based cage supporting a prosthetic flexible bi-leaf valve delivered in one piece. In acute experiments, valve implantation was done in 12 pigs, in four of them a "native" aortic valve was destroyed before/during implantation.

RESULTS:

Valve implantation was successful in all animals. The implanted valve functioned well for the duration of the experiments (up to 3 hrs), even in the animals where "native" valve was not functional.

CONCLUSION:

The study showed the implantation feasibility and short-term function of the tested catheter-based aortic bi-leaf valve. Further experimental studies are warranted.

16. Veronica SANCHEZ (SP)

Diagnosis and Application of Cardiac MRI

OBJETIVES

A “one-stop-shop” for evaluating patients with cardiac disease with MRI.

MATERIALS AND METHODS

All imaging was performed on a 1.5 T MRI.

Dedicated phased-array cardiac coil.

Electrocardiogram (ECG) gating.

Breath-hold condition.

MR power injector.

Post-processing in a workstation.

The patient must only remain fasting.

Was performed multiple projections: four chambers, two chambers, short axis.

Sequences:

Spin-Echo (black blood).

Gradient-Echo Cine-MRI (bright blood).

Inversion recovery (IR) T1 weighted sequence with the inversion time set to null signal from normal myocardium.

MR flow measurement (gradient-echo phase contrast).

Gradient-Echo (perfusion sequence).

RESULTS

Cardiac MRI provides accurate and highly reproducible measurements of left ventricular volumes, ejection fraction, cardiac output, stroke volume and myocardial mass. Use of cardiac MRI provides much clinical information necessary for the medical as well as surgical management.

CONCLUSIONS

Cardiac MRI is a save and alternative technique to other invasive procedures, being a very useful tool in the diagnosis, clinical, management and follow-up of patients with cardiac disease.

17. Ales KUKOVIC (SL)

MSCT Angiography of the Lower Extremity

Abstract body:

When the clinical suspicion for peripheral vascular disease is high, run-off CTA is a sensitive method for detecting stenosis and aneurysms in the iliac, femoral, popliteal or crural arteries. The advantage of MDCT relevant to CTA is the ability to acquire high resolution, near isotropic data sets in a shorter acquisition time. The high spatial resolution and relatively non-invasive nature make MDCT angiography a strong and serious competitor to established vascular imaging techniques. On Clinical radiology institute in Ljubljana, Slovenia we have a lot of experiences in CTA diagnostic of lower extremity. The diagnostic is performed on MSCT Siemens Sensation 16 which provide us with high quality dataset. This dataset gives us opportunity for high quality 2-D and 3-D reconstruction.

18. Robert KOKOVNIK (SL)

CT Angiography of the Carotid Arteries

Abstract body:

The poster presents diagnostic benefits of carotid arteries examination with multislice CT (Siemens Sensation 16) and post-processing options using 2D and 3D-reconstructions (MPR, MIP, VRT, vessel view,...) when description of the anatomy and pathology of the aortic arch, great neck vessels and intracranial arteries is required. CT angiography of carotid arteries from aortic arch to the circle of Willis in a true arterial phase with protocol information and pictures taken with different image processing methods are used for examination purpose in Clinical Center Ljubljana.

19. Janez PODOBNIK (SL)

Contrast Enhanced MRA of the Carotid Arteries

Abstract body:

The poster reveals our experiences with Contrast Enhanced MRA of carotid arteries. We are performing MRA on a 1.5T GE Signa (GE, Milwaukee), using a neurovascular phased array coil and 3D SPGR T1W pulse sequences. A 30ml of the contrast media with flow 3ml/s is detected with tracker (smart prep, GE).

3D reconstruction (MIP, VRT) has been used. CE MRA is a sensitive method for detecting atherosclerosis with stenosis or obstruction, aneurysms, arteries, carotid dissection, fibro muscular dysplasia.

20. Negris CEYDELI (TK)

Re-Positioning of Mal-Positioned Central Venous Catheter: Loop Loop Technique

Introduction:

There are many different factors affecting the efficiency of central venous catheter (CVC). One of the most important reasons for failure of CVC is dysfunction due to mal-position. In this case, we present a case in which the tip of the CVC entrapped into the left internal jugular vein was repositioned by using the long loop technique.

Technical Report: 42-year-old woman with chronic renal failure was admitted to the interventional radiology department for reposition of dysfunctioning CVC. X-ray image of the chest showed that CVC placed through the right subclavian vein had displaced into the left internal jugular vein. Tip deflecting wire technique did not suitable for this case because of the stenosis at the superior vena cava. We preferred trans-femoral venous approach.

Discussion:

Mal-positioned catheter should be repositioned as soon as possible to avoid risk of thrombosis and phlebitis. Mal-positioning of CVC may be easily exposed by means of a simple x-ray image of the chest.

Numerous methods have been described for repositioning mal-positioned CVC. In such instance, repositioning of the mal-positioned catheter may be extremely difficult and additional manoeuvres must be applied. Long loop technique described by Hartnell et al in 1995 may be successful even when the end of CVC is embedded into chronic thrombosis.

Conclusion:

Removal of mal-positioned CVC is not necessary, since repositioning is applied readily in interventional radiology suits. All these repositioning techniques can be safely used. When the end of CVC is fixed, embedded in thrombus or not accessed, the most effective option is long loop technique.

21. Renata RADIC-BERGLEZ (SL)

Contrast Enhanced MRA of the Peripheral Arteries

Abstract body:

CE-MRA of the peripheral arteries is the best method for patients with renal insufficiency or contrast material allergy and for younger patients as well as patients with chronic critical ischemia. We are performing MRA on a 1.5T GE Signa Echospeed (GE, Medical Systems, Milwaukee), using a phased array peripheral vascular coil and 3D SPGR T1W pulse sequences.

We have used contrast injector. Protocol: 2 phases 1.5 ml/s 25 ml and 0.7 ml/s 15 ml. After examination we made 3D reconstruction (MIP) on workstation. We have two MRI scanners and that is the reason why CE-MRA shouldn't become the diagnostic procedure of first choice for investigating suspected peripheral arterial disease.

22. Nelli AMBRUS (HU)

An Atypical Traumatic Intra-Cranial Haemorrhage on CT and MRI Images

Abstract body:

The case of a 20-year-old male patient will be discussed, who was found on the street unconscious. Physical examination found temporal bleeding wound. CT and MR examinations revealed uncommon severe intra-cerebral haemorrhage with mass effect and small defect of the temporal bone. These signs and the absence of subdural or epidural haematoma led to the final diagnosis: unusual traumatic cerebral haematoma and suspect of violence. The unusual origin of the traumatic lesion was identified only in the course of forensic dissection. In accordance with CT findings a hole was found on the temporal bone, no other traumatic lesions could be identified on the skull. The penetrating head injury was caused by a knife. Identification of the source of massive intra-cerebral haemorrhage is sometimes difficult, particularly when the shape and localisation of intra-cerebral haematoma is atypical. In some cases acute CT and MR examination can solve the problem. In such cases the first diagnosis is that of arterial-venous malformation or tumour haemorrhage. Traumatic origin should also be considered, particularly if the history of the patient is unknown.

23. Fatima IAM (TK)

Characteristic MR and DSA Features of Multiple Cerebral Myxomatous Aneurysm

Abstract body:

Cardiac myxoma is a rare tumour. Up to 45% of cardiac myxomas produce emboli systemically. Half of the tumour emboli move to the cerebral circulation causing vascular stenosis or occlusion that lead to infarcts, multiple oncotic aneurysms, haemorrhage and parenchymal metastases.

We present a case with multiple myxomatous aneurysms detected three years after the primary tumour resection and we have described the characteristics of MR and three dimensional DSA (3D-DSA) features of these aneurysms. MR imaging was done for other complications such as parenchymal metastasis, ischemia or chronic haemorrhage.

Cerebral MR imaging of the patient with atrial myxoma even without neurological manifestations may detect cerebral aneurysms and other complications. Rotational angiography and 3D reconstructions are more effective than MR imaging for detecting aneurysms. We recommend that if there is any doubt about detecting aneurysms with MR imaging, rotational angiography and 3D reconstructions must be done.

24. Alicia MARTIN (SP)

Dynamic Cerebral-Spinal Fluid Flow Studies using Magnetic Resonance Imaging

OBJECTIVES

To optimise the study of CSF dynamics using MRI . Permeability, flow direction and quantification of velocity and flow volume can be studied. Clinical applications are: aqueduct stenosis, arachnoid cysts, normal pressure hydrocephalus, Arnold Chiari malformations, syringomyelia and pre-mamilar endoscópica ventriculostomy.

MATERIAL AND METHODS

To perform this technique is necessary to obtain a good electrocardiogram (ECG) or cardiac pulse during the acquisition time because the images are obtained related to cardiac cycle . The 1.5 Tesla MR scant must be provided with digital pulse taker and electrocardiogram (ECG). The electrodes used have to be not ferromagnetic. Phase contrast sequences is used.

Velocity encoding (Vel) varies depending of the type of study performed (quantitative or qualitative). The images obtained can be displayed with Cine or can be used for quantification studies. The data obtained is processed using Flow quantification software provided by the manufacturer.

RESULTS

The best ECG signal is obtained when the electrodes are placed in the back of the patient. It have to be a concordance between ECG and pulse taker register, if not the ECG is not valid. When comparing pulse taker an ECG, pulse taker have better cardiac registration. Our experience show that collaboration ad immobility of the patients is essential for obtain a good cardiac register.

CONCLUSION

The dynamic study of the CSF using pulse taker presents more advantages than ECG registration. The immobility of the patient as well as the knowledge of the specific software to carry out the quantification of the LCR is essential

25. Fatima IAM (TK)

Paediatric Abdominal Tumours: CT Imaging Techniques and Parameters

Abstract body:

Paediatric patients with abdominal masses constitute a major part of our CT patient population. Most frequent paediatric abdominal malignant tumours are neuroblastoma , Wilms tumor, lymphoma , hepatoblastoma.

Since children should not be considered as "miniature adults", each examination should be tailored accordingly. In our presentation, mostly a pictorial review, a variety of paediatric abdominal malignant masses are demonstrated with special focus on imaging techniques and parameters.

26. Santiago SOTES ABRIL (SP)

Magnetic Resonance with SECRELUX®

OBJECTIVES

To describe the technique of Magnetic Resonance cholangiopancreatography (MRCP) after Secrelux® administration used to evaluate the morphology and functionality of the pancreatic ducts.

METHODS

A strongly T2 –weighted image sequence (Thick Slab) in combination with Secrelux®, administration is performed using a unique slice acquisitions in basal condition and during a period of 10 minutes , every 30 seconds. Secretin is a natural hormone segregated by epithelial duodenal cells and stimulates the exocrine pancreatic secretion of water and bicarbonate increasing the amount of tissue fluid and the pancreatic ducts fluids. After 5 or 6 minutes, the fluid secretion is ejected to the duodenum.

RESULTS

This technique allows to obtain images of the bilious-pancreatic tree. The static fluid as bile and pancreatic secretions appear highly hyper intense to the other abdominal structures.

CONCLUSIÓN

MRCP-S is a new technique very useful to study the pancreatic ducts, the exocrine reserve functionality, cystic lesions and also in detecting fistula. MRCP-S allows in a single examination, the morphologic evaluation of the pancreatic ducts and also the pancreatic functional reserve based on quantification of the duodenal secretion.

27. Hasan KURU (TK)

Congenital Duplication of the Gallbladder

Abstract body:

Duplication of gallbladder is an uncommon congenital malformation occurring in about one per 4000 births. Duplication of gallbladder can now be detected preoperatively by imaging studies but owing to the great variety of the anomalies, it

may be difficult to differentiate one from another. Despite the advance in imaging techniques an accessory gallbladder may be discovered only at surgery or even be missed intra-operatively, especially when intra-hepatic.

We present a case of duplicated gallbladder having two separate cavities and cystic ducts which gradually merge into a common cystic duct before emptying into the common bile duct confirmed by MRCP as the US and OCG were inadequate to differentiate the specific type of the anomaly.

A 42 year-old woman admitted to our emergency department with severe right upper quadrant pain lasting for 3 days. She was examined by ultrasonography (US) which showed two separate ellipsoid structures in the gallbladder fossa, one containing a gallstone and the other sludge. There were no signs of acute inflammation in neither of them. These US findings were strongly suggestive of a congenital anomaly of the gallbladder. To evaluate the detailed anatomy and to

demonstrate the cystic ducts first an oral cholecystography (OCG) and then magnetic resonance cholangiography (MRC) was performed. OCG again demonstrated two cavitory fillings in the gallbladder fossa and MRC showed two separate vesicae and two separate cystic ducts. Having documented the exact anatomy the patient was given medical treatment and after 6 months she was managed by performance of open cholecystectomy.

At the intraoperative evaluation the surgeons were not able to detect any anomaly and removed the apparently normal gallbladder assuming a misdiagnosis by radiology. On pathologic dissection two separate gallbladders and two separate cystic ducts contained in an omental covering were reported. The cystic ducts gradually merged into a common cystic duct before emptying into the common bile duct. The omental covering around the duplicated gallbladder was giving it outwardly the appearance of a single organ.

As a conclusive method of diagnosis we used single breath hold MRP demonstrating two separate cavities and cystic ducts thus establishing correct diagnosis. The lack of invasiveness, the absence of contrast medium injection, and the three dimensional images provided make ultra fast MRCP particularly valuable in detection and characterization of gallbladder duplication.

28. Yolanda RAMOS (SP)

MRI of Per-Anal Fistula

Abstract body

MRI (Magnetic Resonance Imaging) is a useful and no-invasive technique to show perianal fistulas and abscesses and their localisation.

Material and methods

MR examinations were performed at a superconductive of 1.0 T Siemens Magnetom Harmony magnet using the body coil(phased array).Our standard high resolution imaging protocol comprises a turbo spin echo T2 weighted sagittal, axial and coronal and short time inversion recovery (STIR)axial and coronal planes. The symptomatic patients with previously known clinical fistula or diagnosed by MRI were incorporated into our study during one year. The administration of contrast(gadolinium)was occasional according to radiological criterion making in these cases T1 images with or without fat suppression before and after contrast injection.

Results

Out of forty-five performed cases the diagnostic was positive in a 86%.In the rest(14%)the result of one study was doubtful diagnostic while the fistula was not shown in the others. In the MRI reference classification used we found the following results:11 subcutaneous,5 inter-sphincteric,6 trans-sphincteric,2 supralelevatoric and 5 unable to determinate due to their chronic aspect.

Conclusion

MRI is a reliable method of detecting perianal abscesses and fistulas. MRI is a no invasive technique useful to determinate this pathology compared with other diagnostic probes.

29. Fatima IAM (TK)

Value of Non-Enhanced Spiral CT in Suspicion of Renal Colic

Abstract body:

Objectives: The aim of this study was to assess the value of non-contrast-enhanced spiral computed tomography (NECT) in the evaluation of cases with renal colic referred to the emergency room with acute flank pain and to define whether these CT findings will allow to facilitate the proper management of these patients.

Methods:

NECT was performed in 85 patients with renal colic. NECT was done with a collimation of 5 mm and table speed of 5 mm/sec and a pitch of 1.5 without use of either oral or intravenous contrast agents. Axial scans were taken from the level of upper renal poles to the base of urinary bladder.

Results:

Of 85 patients evaluated with NECT, urethral stones were found in 56 (66%) patients. Pathologies of urinary system other than ureterolithiasis were revealed in 5 cases. Three patients were diagnosed as having pathologies in other systems. Remaining 21 cases were normal. There was only 1 false-negative case in the study. In detecting urinary calculus with NECT, sensitivity was 98%, specificity was 100%. NPV was 93%, PPV was 100% with an accuracy of 87%.

Conclusion:

NECT is the diagnostic tool with high sensitivity and specificity in the evaluation of patient with acute flank pain. It is also a practical evaluation method because it does not require preparation and use of contrast agents, and is short in duration. NECT is also the method of choice in extra urinary and non-stone urinary pathologies, accompanied by acute flank pain.

30. Pirjo VESTERINEN (FI)

One Year Experience from Fingerprint Based Patient Recognition System in Radiotherapy Department

Objectives:

All radiotherapy departments are sometimes mistreating a patient with another patient's treatment data. This is an unpleasant situation both to patient and staff. It may lead to modification of the patient's radiotherapy plan and, in the worse case, health problems. We wanted a system where it is impossible to treat a patient with another's treatment data. System should also be easy and quick to use for both patients and staff.

Methods:

We developed in co-operation with manufacturers (Varian Medical Systems, Palo Alto, USA and Deltabit Ltd, Tampere, Finland) a fingerprint based biometric method to identify a patient, so that the treatment cannot be started before the recognition of the patient. Encrypted reference fingerprint image, patient's name and ID are stored to the database before the first treatment.

Before each daily fraction, patients are asked to put their forefinger onto the optical reader and data is compared to the data of the selected patient from the treatment console. If the data doesn't correlate, an interlock prevents the treatment delivery.

Results:

The system has now been routinely used for one year. Not a single "wrong patient" case has been occurred since the installation. Elderly patients with worn fingerprints (< 10 % of the patients) have been a challenging task to register.

Conclusion:

Identification system is now implemented and in clinical use. System has not lengthened the treatment times. Minor problems still occur, but product development is continuously underway. Future applications of the system for the radiotherapy department are now being researched.

31. Hilal VIDINLIOGLU (TK)

The Analysis of Output Factors in Irregularly Shaped Electron Fields

Introduction:

It is necessary to know the output factors for irregularly shaped electron beam fields to accurately deliver the prescribed dose to the target.

Aim:

To analysis the output variation of irregularly shaped electron fields depending on the blocking ratio and energy for different size of standard applicators was aimed.

Materials and Methods:

The output of standard applicators and irregularly shaped fields were measured by using PTW electrometer with 0,6cc ion chamber and RW3 solid water phantom at each dmax depths of 6,8,10,12 and 15MeV electron energies using Elekta SLi25 Linac. The 6x6,10x10,14x14,8x16 and 20x20cm² standard applicators were used with the various custom-made cerrobend inserts with blocking ratios of >%30, %30-%10 and <%10 at SSD=100cm. More than six measurements were done for each of these 3 groups. For all electron energies, the output results of each standard applicator and irregularly shaped fields with these 3 group inserts were compared and the percent variations were calculated.

Results:

For all electron energies and 3 group inserts ratio, the output variations were decreased by increasing applicator size. When the blocking ratio was >30% the results of output variation in 6 Mev were 8% for 6x6 cm² and 0.45% for 20x20 cm², on the other hand in 15 Mev these variations were 9.4% for 6x6 and 1.86% for 20x20 respectively. For all energies and applicator sizes, the output variations were increased by increasing blocking ratios for each insert.

For 6x6cm² when the blocking ratio was <10% and >30 %the output variation were found 0.9% and 8% in 6 MeV, otherwise these variations were 1% and 9.4% respectively in 15MeV.

Conclusion:

As known the output factor variations have been appeared to depend on electron energy. This study has been shown that the blocking ratio of field size also affects the output factor. It is recommended especially in low electron energies to measure the output of small fields with more then 30% blocking ratio.

32. Marta SOTO GARCIA (SP)

Sentinel Lymph Node Identification in Malignant Myeloma

Objective

To determine the importance of a perfect coordination and a meticulous accomplishment of the technology (skill), in the location of the sentinel lymph node (SLN).

Material and method

We studied all the patients diagnosed of malignant melanoma, which practised a lymphoscintigraphy, during 2003 to 2005, having in it counts the following technical aspects:

- Preparation and positioning of the patient and gamma camera.
- Radiopharmaceutical used (albumin micro colloid or nano coloide)
- Placement of lead on the points of injection of the radiopharmaceutical

- Acquisition of images (dynamic and static study)
- Positions and images acquisitions of gamma camera using a phantom refilled with water and Tc99m to delimit the anatomical contours of the patient.

Results

In a global vision, the doctor and the technologist who perform the lymphoscintigraphy, often need to change the standard positions and images acquisitions.

Conclusions

The procedure of location of the SLN needs on the part of the technologist, the knowledge of tracer quality (particle number), a correct preparation of patient and an ideal acquisition of images with the purpose of obtaining results with a high reliability.

33. Natasa BIZJAK (SL)

Comparison of volumes and dose distribution at 2D and 3D treatment planning

Abstract body:

With modernization of Department of Radiotherapy on Institute of Oncology in Ljubljana, started to plan treatment of tumors by the help of 3-D system planning. Differences of size of treatment volumes will be moved briefly and dose distribution at 2 dimensional and 3 dimensional manner of planning.

34. Andrea FARKAS (HU)

MRI Based Treatment Planning for Brachy Therapy in Patients with Recurrent Head and Neck Tumours – Early Experiences

Purpose:

To analyse the efficacy of MRI assisted high dose rate brachy therapy (HDR-B) in the treatment of local relapse or persistent tumours in previously irradiated head and neck cancer patients.

Methods and Materials:

In 2004 six pre-irradiated patients with local recurrence of head and neck squamous cell carcinoma (SCC) were treated with interstitial HDR brachy therapy with curative intension. The location of the needles were decided based on clinical, CT and/or MRI findings at diagnosis and at the time of brachy therapy. In 1 cases the after loading catheters were inserted during resection and reconstruction. After clinical placement of the catheters MRI was performed with applicators in place. Images were on-line transferred digitally to planning system. After delineation of GTV, PTV and organs at risk (OAR) computer assisted 3D conformal planning was undertaken. Considering the total dose of external beam radiotherapy (EBRT) patients received hyper fractionated HDR (single dose 3 Gy; 2 fraction/day; interfraction interval 6 hours) up to a dose of 15-21 Gy.

Results:

After a median follow up 9,5 months (3-16) local tumour control was achieved in 4 (66%) patients, 1 (17%) patient developed cervical lymph node and distant metastases and 1 (17%) patient has progressed in the primary site. Restaging studies included MRI and/or CT. In order to get more homogenous distribution the dose was optimised to the surface of the PTV. Dose-volume-histograms (DVH) were evaluated in each case. Based on the RTOG acute morbidity scale no Grade III.-IV acute side effects were observed. Catheter insertion related morbidity was not documented also.

Conclusion:

Providing a good target and OAR visualisation in the postoperative and/or post irradiated areas with the possibility of individually adapted dose distribution interstitial MRI assisted 3D HDR brachy therapy is a feasible, effective method in the treatment of previously irradiated head and neck tumours.

Introduction:

The standard application system for HDR brachy therapy utilized in the definitive management of patients with cervical carcinoma may result in inadequate dosage distribution due to the gauze packing of the ovoids, operator error, multiple repositioning, or simply because of the anatomical situation. A novel adjustable applicator has been designed to address these concerns.

Materials and methods:

During the period of the study 49 patients received magnetic resonance imaging (MRI) based three dimensionally (3D) planned high dose rate (HDR) (BT) as part of the definitive treatment for FIGO stage IIB - IIIB squamous cell cervical carcinoma. Special adjustable applicator device was designed and used for BT. Flexible 5 F (1.65 mm) interstitial applicator was inserted intra-cervically without dilatation under local anaesthesia. The cylindrical holder with one central and four circumferential channels for the flexible applicators was inserted in the vagina sliding it through its central channel over the previously fixed flexible applicator. T2-weighted (axial and sagittal) pelvic MR images with the applicator in treatment position were taken and volumetric 3D reconstruction of the anatomical structures was performed for dose adaptation to the planning target volumes (PTV2) and the organs at risk (OARs). The HDR BT was carried out in 3 fractions, twice weekly, with a total dose of 12 Gy prescribed to 90% of the PTV2.

Results:

The designed adjustable cervical applicator prevented over dosage of the organs at risk and under treatment of the distant tumour spread in all cases. With no hazard of a possible radiation, or mechanical injury the response to treatment for target lesion was complete regression in 14 patients (28.5%), and partial regression in other 21 patients (42.8%). Local tumour control was median in 12 cases (24.4%), where the disease was considered stable, and poor in 2 patients (4.1%), who displayed progression of the disease. Unlike other adjustable intraluminal applicators due to the thin diameter of the central catheter, the insertion of the device was possible without the need of previous dilatation and its intracervical part was fixed to the cervix for the whole period of the treatment.

Conclusion:

The used MR compatible, flexible applicator allows safe and reproducible cervical radiotherapy with no added discomfort or hazard for the patient. The optimization of brachy therapy was based on the accurate applicator localization, patients' anatomy and tumour extension.



THE MALTA PHOTOGRAPHIC SOCIETY

- A Short History and its Activities

The Malta Photographic Society was founded in 1961 by a certain Joseph Sammut, a local businessman from Valletta, who gathered together a handful of friends interested in Photography and formed the basis of the present Society, which is now 43 years old.

Thanks to the intervention of Fr Celestino Portelli OSA, an Augustinian monk and one of the co-founders of the Society, the first meetings were held in the corridors of the adjacent Priory of St Augustine in Valletta. In 1966, the Society moved to its present premises further down the same Old Bakery Street, Valletta.

The Society rapidly expanded its contacts both locally and abroad and the membership started to increase at a quick pace. Many local firms sponsored a number of competitions organized by the Society and still do so to this very day.

Undoubtedly, the turning point of the Society's present success, was its membership of the International Federation of Photographic Art – FIAP way back in 1983. The Society has been represented in all the FIAP International Congresses ever since. The Society is also a Member of the Photographic Society of America – PSA, the Italian National Photographic Federation – FIAF and more recently, the "Image sans Frontiere" – ISF, a European based Federation which last year held its Annual Symposium here in Malta.

The Malta Photographic Society is the only photographic Society in the Maltese Islands catering for the serious amateur photographer and has a membership of over 200. It enjoys the esteem of the highest authorities in the Island and is often called to collaborate and give its expertise to several local councils and other constituted bodies wanting to organize their own photographic exhibitions.

The following are the main activities of the Society both at local and international level:

Open Annual Exhibition and Competition

Patronship of photographic activities organized by Government Departments, Local Councils, Schools, Cultural Groups, and other constituted bodies. Collaboration in the organization of these same events.

Close collaboration with the Malta Tourism Authority in organizing an Annual Exhibition.

Annual Competition for works depicting the "Cultural Heritage of the Maltese Islands.

Annual Competition for works depicting "Nature & the Environment"

Special Award for the Best Work depicting a Nature theme in the Maltese Islands.

Annual Courses in Basic Photography open to the general public.

Courses in Digital Photography

Courses for persons with a disability at the "Centru Hidma Soċjali", Sta Venera.

Weekly meetings consisting of talks, hands on demonstrations and internal competitions.

International Exhibitions.

Participation in International Exhibitions both at club and individual level.

Exchange of Exhibitions with foreign Federations and individual clubs.

Exchange of prominent photographers to sit on judging panels.

Attendance at International Congresses since 1983.

Hosting International Federations.

Affiliation to International Federations: FIAP/FIAF/PSA.ISF

Publications:

Quarterly Journal of the Malta Photographic Society – Distributed free

Bi-Monthly Newsletter sent to all members of the Society

The Photo Art Collection

Photography Year Book

Illustrated Catalogues for Open Annual Exhibitions

Carmel H. Psaila HonEFIAP
President

