

REVIEWS

Meetings

The Second Malmö Conference on Medical Imaging: Optimisation Strategies in Medical X-Ray Imaging

The 2nd Malmö Conference on Medical Imaging, jointly organised by the members of a co-ordinated research project of the Commission of European Communities (CEC) Radiation Protection Research Programme, was held at Malmö University Hospital, Malmö, Sweden, from April 23 to 25, 2004. The conference covered a wide area of research: from recent technology to advanced methods for evaluation of image quality with special reference to development and evaluation of optimisation strategies. The conference was intended for a wide audience of medical physicists, radiologists, engineers, and radiographers as well as representatives of authorities and manufacturers. The conference was a continuation of a series of successful CEC conferences in the field of medical X-ray imaging. The apparent progress during the last years in research in X-ray technology, digital techniques, image analysis, strategies for optimisation and dose reduction as well as predictivity of the outcome of an investigation has made it urgent to arrange such a conference.

The current progress in medical imaging is remarkable. In a few years, all major imaging modalities have taken dramatic steps forward. A major trend is to merge data and images of complementary imaging modalities. Transmission and detection of X-rays continues to be the basis for radiography, angiography, fluoroscopy, and mammography examinations. However, screen-film detectors are now being replaced by digital systems. X-rays are also basis for CT-systems, which currently operate at up to 64 slices. The multislice approach has significantly shortened the scan-time and improved the 3D spatial resolution, making CT very attractive for wider range of diagnostic examinations.

The topic of the conference was challenging: though the benefits of the medical X-ray imaging can hardly be overrated, the methods and choice of technical parameters in the medical imaging process are still far from optimum. The issue of radiation protection in medical imaging has attracted significant attention over past years. The numbers of scientific publications have emphasized the deleterious effects of ionizing radiation in diagnostic and interventional radiology. Also, it is obvious that CT

examinations are responsible for a considerable part of the radiation dose received by patients. Optimisation of the imaging conditions is crucial, both for new image detectors and standard screen-film systems. The understanding of the relation between diagnostic outcome of imaging procedures and their physical and technical characteristics is essential. Concerning that, the conference has covered a wide area of research in image quality assessment and patient dosimetry, with emphasis on the development and evaluation of optimization strategies which can underpin the European Medical Exposure Directive 97/43Euroatom, Basic Safety Standards, and national legislations.

The topics of the conference were:

- recent technological developments and their influence,
- physical measurements and standards development,
- image display, monitors and their environment,
- assessment of clinical images and quality criteria,
- modelling procedures and model observers,
- optimisation in digital radiology,
 - including mammography, CT, interventional and paediatric radiology,
- patient dosimetry and reference doses,
- correlation of clinical image quality indices with physical parameters,
- consensus on assessment and evaluation methods, and
- unification strategies.

A total 12 invited lectures covering current research aspects were given by distinguished scientists and professionals in the field: Michael Moores (UK), Eliseo Vano (Spain), Dieter Regulla (Germany), Robert Wagner (USA), Dev Chackraborty (USA), Ulrich Neitzel (Germany), Hilde Bosman (Belgium), Ehsan Samei (USA), Willi Kalender (Germany), Stephen Golding (UK), and David Dance (UK). Submitted contributions were presented in 11 sessions (40 oral and 43 poster presentations). The sessions focused on the topics of current interest. Also, two current European research projects, DIMOND and RADIUS, both related to the dosimetry and image quality assessment in imaging were promoted at the conference. Scientific papers were presented by authors from all Western-European Countries, USA, Estonia, Latvia, Lithuania, Bulgaria, Poland, and Serbia and Montenegro. The abstracts were published in the Book of Abstracts distributed to the participants. The Proceedings after peer-review will be published in the special issue of Radiation Protection Dosimetry. A guided tour at the Malmö University Hospital was organized for all participants.