

XII Congress of the Hungarian Society of Nuclear Medicine

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The XII Congress of the Hungarian Society of Nuclear Medicine was held in Gyula, a lovely small town in the south-east of the country. The scientific committee selected 72 papers for oral presentation and 29 papers for poster presentation. Information about latest developments was presented by Prof. Biersack, Germany (Oncology), Prof. Clausen, Germany (Instrumentation), Prof. Cuocolo, Italy (Cardiology), Prof. Grünwald, Germany (Neurology), Prof. Kirchner, USA (Project application) and Prof. Lind, Austria (PET). The programme was completed by round tables on sentinel lymph node and on radiation protection in nuclear medicine.

Instrumentation

Mediso, the leading representative of Hungarian manufacturers, presented the results of their recent developments. The palette for routine diagnostics is now completed by a dual-headed gamma camera. In addition, dedicated gamma cameras for heart and brain SPECT studies have also been introduced recently.

Regarding processing software, Kari and co-workers reported on their positive experience with the new SPECT-oriented package of Mediso. This software is mainly intended for routine diagnostic purposes.

Karman and co-workers in Balatonfüred have collaborated for many years with the Institute of Biophysics in Strasbourg on the development of a nuclear stethoscope. Dr Karman reported on extensions of the software recently implemented and announced a commercially available product for the near future.

Several working groups reported on their experience with intra-operative probes for sentinel lymph node detection in different malignancies. Furthermore, Duffek and co-workers from Semmel-

weis University, Budapest, presented promising results in the supporting surgical exploration of parathyroid adenomas. Based on the data of 48 patients, they concluded that, by using the probe, operation time can be reduced and the number of successful excisions can be increased.

Radiopharmacy

The motors of radiopharmaceutical development in Hungary are the Frederic Joliot Curie National Research Institute for Radiobiology and Radiohygiene, and the Institute of Isotopes. Both companies co-operate with research groups at universities, national institutes or big hospitals.

The Institute of Isotopes and the Institute of Nuclear Medicine of the Medical University in Szeged presented the successful reproductive synthesis and pre-clinical testing of TRODAT, a Tc-99m-labelled tracer for the investigation of the dopamine transporter system.

A further area of tracer development is the radiopharmaceutical background for palliative therapy, using the generator product Rhenium-188. The Szeged group presented promising results using the generator of the Oak Ridge National Laboratory. The Institute of Isotopes reported on the testing of different kits for labelling with Rhenium-188.

One of the main research topics in the Joliot Curie Institute is the production of labelled monoclonal antibodies. Janoky and co-workers reported on the pre-clinical therapeutic and clinical diagnostic results with their labelled anti-CEA monoclonal antibody. The Iodine-131-labelled antibody exhibited a remarkable immuno-reactivity of 80% and successful inhibition of tumour growth in mouse. The Tc-99m-labelled antibody was clinically tested by Földes and co-workers. This group reported good image quality and successful detection of recurrent colorectal carcinoma, primary breast cancer and its lymph node metastases.

Further presentations of the Joliot Curie Institute reported on preliminary results with the technetium labelling of the serotonin 1A receptor antagonist WAY 100636 and of low density lipoproteins.

The PET-group in Debrecen presented its Fluorine-18-FNECA, a tracer for adenosine receptors. Pre-clinical investigations demonstrated a promising tracer distribution accomplished by fast kinetics.

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Methodical development

Initial experiences with transmission-based non-uniform attenuation correction were reported by Nagy and co-workers from Semmelweis University. They demonstrated that attenuation correction leads to enhanced reliability in the analysis of posterior perfusion defects.

Zambo and co-workers from the University of Pecs observed clinical signs of cerebral ischaemia after dipyridamole test. Repeated investigations combined with brain perfusion SPECT demonstrated regional perfusion defects correlating with the clinical symptoms. They concluded that dipyridamole test may be suitable for early detection of subclinical cerebral ischaemia.

Györke and co-workers from Semmelweis University analysed the results of antigranulocyte antibody scintigraphy of the abdomen. They found surprisingly frequent unspecific bowel activity, which may decrease the specificity of the method in this area.

Aspects of radiation protection in connection with lung ventilation studies were the topic of a presentation from Szeged University. Sera and co-worker concluded that the application of radioactive aerosols in the investigation room does not increase absorbed dose of the personnel significantly.

Quality assurance

Several groups reported the results of retrospective analysis after therapeutic interventions. Konrady and co-workers analysed 199 patients after treatment of single autonom thyroid nodules. 174 patients had become euthyroid after the first therapy, a second therapy was necessary in 12 cases, and 13 patients turned out to be hypothyroid.

Szentesi and co-workers checked the efficacy of radiosynovectomy 7 years after therapy and documented good or excellent results in 70% of 213 patients.

There are considerable efforts in Hungary to introduce quality management systems corresponding to ISO 9001:2000 in nuclear medicine departments. On behalf of the Hungarian Society of Nuclear Medicine, a Quality Management Handbook is in preparation in order to give orientation for interested physicians. J. Gombos summarised the requirements of the certification in an excellent paper.

Clinical investigations

Several authors presented results of clinical investigations in large patient numbers.

Bartfai et al. demonstrated, that early surgery can be prevented in about 50% of infants with clinical suspect hydronephrosis when using functional renal scintigraphy.

Földes and co-worker demonstrated that in patients with PSA level below 15 ng/ml whole body bone scan does not yield any additional clinical information and can usually be omitted.

The group of the National Institute of Neurosurgery presented the results of ictal brain perfusion SPECT. Kadar et al. demonstrated that this sophisticated method can indeed be

performed on a routine basis in optimally organised clinical structures.

The PET centre in Debrecen reported in several presentations about clinical experience with FDG. Corresponding to others, excellent performance has been attested for fluorine-18-FDG PET in non-small cell lung carcinoma and medullary thyroid cancer. In patients with germ cell tumours a positive predictive value of 77% was documented.

In a co-operative study with the University of Freiburg, Györke et al, from Semmelweis University, Budapest, reported on the result of FDG-PET in bone malignancies. The method offered additional information compared to the bone scan in several cases, however its clinical place is still to be defined.

Clinical research

High-level routine diagnostic work is mandatory for effective clinical research. Dibo and co-workers from the University of Szeged reported on brain perfusion SPECT studies in patients with Parkinson syndrome. They concluded that in Parkinson disease the frequency of regional perfusion defects is low, whereas in Parkinson syndrome it is high.

Galuska et al. from Debrecen University investigated cardiac innervation using Iodine-123-MIBG in patients with neurocardiogen syndrome and documented regional abnormalities in this patient group.

Szekeres et al. from Szeged University performed Iodine-123-IBZM brain scans in patients treated with Quetiapine and found that the effectiveness of treatment can be prognosticated by this method.

Basic research in medicine

Several presentations documented that nuclear medicine can find a definitive place in basic research.

Balogh et al. from the Joliot Curie Institute used spontaneous tumours in dogs for modelling of human disease in testing of new therapeutic and diagnostic pharmaceuticals.

Szilvasi et al. from Semmelweis University documented that in Graves' ophthalmopathy the number of somatostatine receptors of leukocytes is more increased than in Graves' patients without clinically manifesting ophthalmopathy.

Multi-drug resistant tumours were the topic of the work of Krasznai et al. from Debrecen University. Comparing C-11-methionin and F-18-FDG, they concluded that the activity of the p-lypopteine can be demonstrated by increased FDG-accumulation. The difference between MDR and non-MDR tumours disappears by blocking the p-lypopteine and is increased after stimulation.

Finally, the most prospective tendencies of Hungarian nuclear medicine can be demonstrated by the image of the first human study with Tc-99m-TRODAT from Szeged University (Fig. 1). This image represents the innovative power of university research groups in close co-operation with industrial partners. Only these joint efforts can ensure the continuous development of nuclear medicine in research and in clinical patient care.

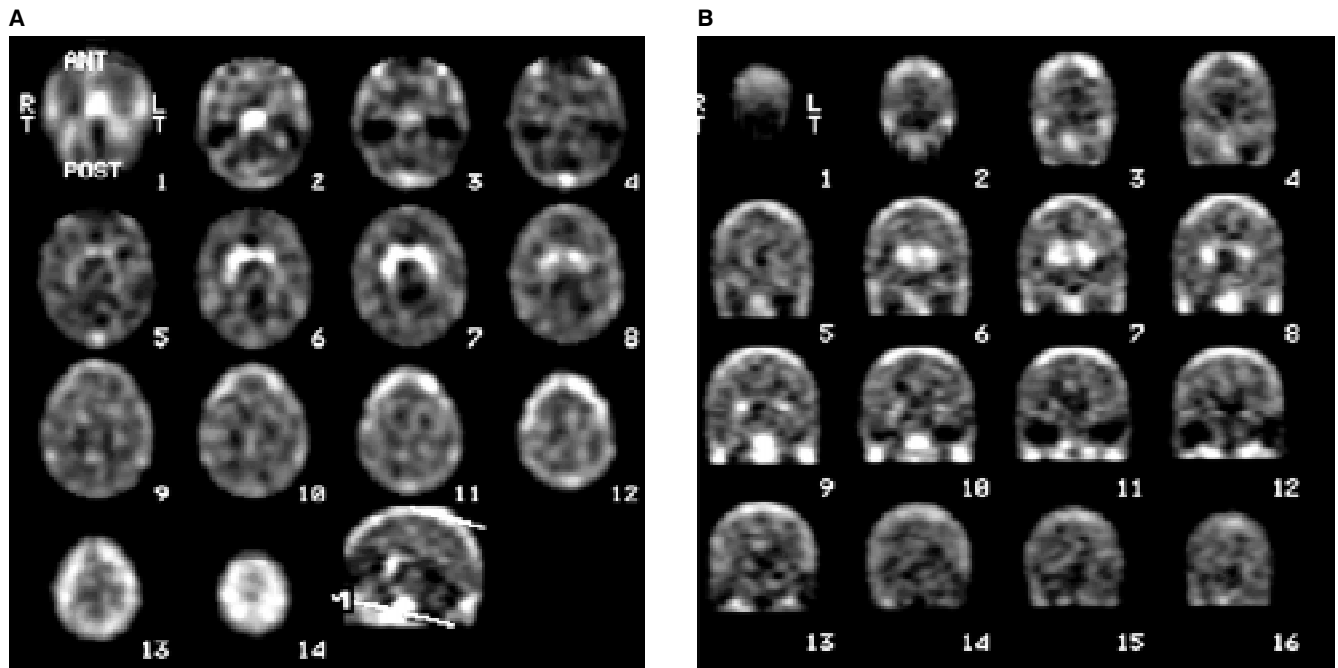


Figure 1. Dopamine transporter scintigraphy using Tc-99m-TRODAT. Transverse (A) and coronal (B) slices of the healthy volunteer.