

Congress of Polish Society of Nuclear Medicine Highlights Lecture

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Introduction

The Congress of the Polish Society of Nuclear Medicine was held in Bydgoszcz from 26–28 May, 2004. In total 101 papers were presented accompanied by a series of programme lectures of our foreign guests, a technologists session and a post-congress meeting on PET. As a highlights lecturer I have the pleasure to summarise some of these presentations.

Endocrinology

An issue of growing importance today is apoptosis. Rogowski and colleagues from Białystok presented a series of papers on apoptotic changes following ^{131}I therapy of hypothyreosis.

Two papers were devoted to radioiodine therapy of large-sized goitres. Listewnik et al. showed that increasing the administered activity is helpful in middle-sized goitres, with no associated dose-effect in goitres larger than 29 ml. Bączyk et al. showed good results of RN treatment in very big goitres (100–370 ml), advocating fractionated-dose RI therapy.

Traditionally, a series of papers on parathyroid came from CSK Warsaw centre. Mączewska et al. strongly recommends the intra-operative use of a hand-held gamma probe (efficacy 70%) in primary persistent parathyroidism. A nice study, although the number of patients was small.

Two interesting posters came from Nowicka et al. from Bydgoszcz. Firstly, they brought up the simple, yet interesting issue of the efficacy of radioiodine treatment of hyperthyreosis in the elderly: in younger patients treatment results came faster, but overall results were comparable in groups of younger and older patients. In a second study they analysed the results on RI therapy on

a goitre's volume, showing a 1/3 decrease in volume 4 mo. post-treatment. Well, cosmetic results also matter.

Along the same lines, there was also an interesting poster on the quality of life of patients with orbitopathy pre- and post- RI treatment by Warmuz et al. from Poznań. Using a complex battery of psychological tests they did not get conclusive results, but definitely this issue is worth continuing to investigate.

Endocrinological oncology

In endocrinological oncology many interesting papers came from the Institute of Oncology in Gliwice. An interesting series of 35 patients with medullary carcinoma treated with I-131-MIBG was presented by Szpak et al. A good palliative response was observed in about half of the patients. No such good results were shown by the other study on 13-cis-retinoic acid in afunctional thyroid carcinoma metastases.

Also medullary carcinoma was the focus of a PET study from Bydgoszcz, done by Pietrzak and colleagues. They showed negative results in a half of patients. Why? This study would be beneficial if crossed with e.g. $^{99\text{m}}\text{Tc}$ -(V)-DMSA scanning.

A very practical study on the high utility of a first post-op thyroglobulin assay in prognosing thyroid metastases came from Łódź and Zgierz. Fine statistical work!

An interesting poster on RIT treatment of thyroid carcinoma in children came from Poznań. In 2/3 of patients ablation came after the 1st treatment, in remaining 1/3 after the 2nd treatment. This deserves further following up.

From the same centre there was a poster on ambulatory thyroid cancer radioiodine treatment study using fractionated radioiodine doses (30 mCi). The results were promising.

Cardiology

Papers in this section were focused mostly on coronary heart disease and myocardial infarction.

A very fine, large (181 patients) study on ejection fraction assessed by GSPECT came from the Institute of Cardiology in Warsaw by Teresińska et al. They did a very thorough cross study of quantitative GSPECT, EMORY Cardiac Toolbox and conventional RN ventriculography (RNV) in a variety of clinical situations. Well, is RNV still the winner? From the same centre there came a very nice paper on I-123-MIBG scanning assessing heart adrenergic system post laser revascularisation (TMLR). Post-TMLR denervation may play a role in patients' clinical course post-op.

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Also a paper to TMLR was presented by Dziuk from Warsaw/London. This is another interesting voice in the discussion on how exactly TMLR works. Despite clinical improvement, 201-Tl scanning initially, but not permanently, increased; EF decreasing. Why?

Kostkiewicz and Szot from Cracow assessed the safety of the dipirydamole stress test in patients with CAD and aortal valve stenosis. The issue is old while the model is new. Congratulations! Dziuk, Canizales and Britton studied with heart perfusion scintigraphy and an adenosine test a group of patients with non-diagnostic coronarography. They showed perfusion changes in one third of patients, with a predictive and risk stratification role of RN studies.

Two interesting posters on the nitroglycerine test came from Kobylecka et al. from CSK in Warsaw. They underline the role of the nitroglycerine test in predicting the efficacy of revascularisation treatment. On the other hand, nitroglycerine action seems to be highly heterogeneous, exerting an increase of myocardial perfusion as well as a steal-effect

An interesting phenomenon of rest-deterioration of heart perfusion was analysed in a poster by Dąbrowski et al. from Warsaw. In a sound material of 81 pts they showed this effect mostly in the arterial beds with little or no effect by arteriosclerosis. Are these microcirculation changes or the steal phenomenon?

Cholewiński et al. from Lublin showed post-stress myocardial stunning in patients with CAD by means of GSPECT. From the same group there came a poster on natriuretic peptide in patients with CAD.

A very interesting poster was presented by a group by Siminak from Lublin. They analysed the distribution of 111-In labelled cells autotransplanted in patients with myocardial infarction — a ne2 modality of MI treatment. The results were somewhat not entirely conclusive, but the goal of this paper seems to be very interesting.

Oleksa et al. from Poznań showed an impaired chronotropic reaction to dipirydamole in diabetic patients — something personally close to the heart of this note's author, who did his M.D. on adrenergic reactivity in diabetes some years ago.

An interesting paper by Stefaniak et al. on the application of an artificial neural network in prognosing GSPECT ejection fraction came from Lublin. Artificial intelligence support in clinical decision-making is a growing challenge for today and tomorrow.

Oncology

Oncological papers were focused mostly, but not only on "hot" issues of lymphoscintigraphy and peptide imaging.

Sentinel node

Regarding lymphoscintigraphy, Nejc and colleagues from Łódź underlined the importance of lymphoscintigraphy in truncal melanoma — moreover, they consider it absolutely necessary. Not very ground-breaking, to put it frankly, but fine material (120 patients), and a study of good practical importance. Similar remarks were made in a poster by Birkenfeld et al.

Jastrzębski et al. from Gdańsk analysed a large series of sentinel node identification in 195 breast cancer patients. They advocate peri-areolar administration of tracer, similarly as Nejc et al. in their another paper.

An issue of growing importance is sentinel node identification in gynaecological patients. A paper by Wydra et al. from Gdańsk

showed a high, but not strikingly high sensitivity of RN studies, when compared with the blue dye technique.

The same goal but a different model. Sentinel node in oral cavity carcinomas — paper by Nowaczyk and Wyszomirska from Poznań. Fine results, but the authors were discussing breast and pelvic carcinomas probably by editorial error. Sentinel node identification performed in pharyngeal carcinoma was presented by Gołębiowska et al. from Lublin.

Another model — penal carcinoma case study also by Nejc et al. Well, are we going back to the beginnings of lymphoscintigraphy?

Another goal: SN in GI tract tumours — described nicely by a group led by Hubalewska from Cracow. Hopefully, their number of patients soon will be growing to more than 5.

A short but important paper from Gdańsk, by Jastrzębski et al. assessed staff radiation safety in intra-operation SN determination. The absorbed dose was far below all limits. Nothing makes nothing. A little item, but a nice tool to combat radiophobia.

Neuroendocrine tumours/peptides

Plachcińska and colleagues from Łódź, made a very thorough study of 99m-EDDA/HYNIC-Tyr³-octreotide in solitary lung tumours using ROC curves. They had very good results in malignant tumours, less promising in benign ones. Quatitative analysis did not particularly improve the outcome. A similar study came from the Oncological Institute from Warsaw.

Hubalewska et al. advocate the superiority of 99m-Tc-Octreotate over 111-In-Octreoscan and 131-MIBG in imaging of those tumours. It could be very good news.

Szaluś et al. made a fusion of 99m-Tc-Depreotide and CT images in lung carcinoma. Fine technical work! How nice is to have a Hermes workstation...

Budlewski et al. from Białystok analysed the prognostic role of 131-I-MIBG imaging in neuroblastoma in children.

Others

A fusion imaging study came also from Łódź by Górska-Chrzastek et al. They fused methyl-tyrosine brain tumours SPECT and MR imaging with excellent results. This seems to be an interesting alternative to PET.

This thesis might be supported by a series of PET brain tumour scans by Szefer et al. from Bydgoszcz — in low malignancy recurrence the results were not very impressive.

Chrapko and colleagues analysed the levels of bone turn-over markers PINP and ICTP in bone metastases.

Therapy

An interesting question was posed by Kolodziejczyk and Zebrowski from Wrocław — is RN treatment of bone metastases effective in neoplasms other than breast and prostate carcinoma. The authors' answer is no, but the question is probably far from being elucidated.

A number of other studies was devoted to the same topic, i.e. RN bone metastases treatment: by Birkenfeld from Szczecin, by Gołąb from Tychy, by Bączyk from Poznań. This common marker is generally lower than in world literature. Are Polish patients referred too late for RN treatment or something is wrong with our strontium or samarium?

Buscombe, Ćwikła et al. from London/Warsaw analysed the efficiency of 111-In and 90-Y peptide therapy in neuroendocrine

tumours, as compared with ^{131}I -MIBG therapy. There were no differences in survival time. Why? However, the next paper from the same group showed very good prolonged survival.

Neurology

In contrary to world tendencies, which has also been observed at recent Polish SNM congresses, the number of NM neurological papers has been increasing.

Two papers were devoted to RN imaging in Parkinson's disease (PD). Chmielowski et al. from Warsaw presented a report on ^{123}I -FP-CIT in Parkinson's disease in 8 patients with parkinsonian syndromes. They concluded that there is a high usability of this testing in PD. A group led by Derejko from Gdansk performed rCBF SPECT in PD patients with and without dementia. Their results indicate rCBF changes indicating mixed, vascular/neurodegenerative background of dementia in PD.

From the same centre came a paper by Jodzio et al. on post-stroke aphasias and rCBF SPECT, which has proven to be useful not only in assessing the cortical damage, but associated neuronal loops as well.

An interesting paper, performed jointly with one of the best Polish neurosurgical centres came from Lublin. Nocuń et al. assessed perfusion changes close to and around cerebral artery aneurysm, just before embolisation — a nice tool to assess the range of CBF changes in those patients.

Pach and colleagues from Cracow reported an interesting report of rCBF SPECT scanning in familial lead tetra-ethylate poisoning. Multiple rCBF defects were not visible by CT, and confirmed only by MR spectroscopy months later.

A very nice study on brain image MR/SPECT fusion came from Łódź by Grzelak and colleagues — very important not exactly for its scientific advances, but a modern and intradisciplinary approach to CNS imaging, which is still rare in Poland.

Digestive tract

A study on radionuclide transit in bowel-reconstructed oesophagus came from CZD in Warsaw by Świątek et al. From the same centre came an interesting paper on MBIDA scanning deconvolution analysis in infants with bile atresia.

Pilecki and colleagues from Bydgoszcz reported an interesting case report on RN studies of post-traumatic auto-transplantation of splenic tissue in the abdominal cavity. Another interesting case of cholescintigraphy in Siamese twins was reported from Warsaw by Kijek.

The papers on IDA clearance by Surma and Frieske came from Łódź. Technically perfect, as usual but frankly speaking. I would like to know what the practical importance of IDA clearance is.

Elbl, Birkenfeld and colleagues (Szczecin) showed an elegant cross-study of oesophageal passage and reflux, gastric emptying and a battery of GE diagnostic tests in children with bronchial asthma. Still endoscopy proved to be the best, but a multidisciplinary approach is to be recommended.

Kidneys

An interesting study in paediatric nephrology came from Łódź. In a large amount of material they assessed reproducibility of

$^{99\text{m}}\text{Tc}$ -unithiol static and SPECT kidney scans using two different scales by Goldraich and Howard. From the same centre was a paper on renal scars in youngsters with diabetes mellitus. They showed a two-fold bigger frequency of scars in DM, already at a young age. Better reproducibility results were achieved in planar than in static imaging. Why? In an interesting study from Lublin Chrapko and colleagues showed the importance of dynamic renal scintigraphy in patients following percutaneous lithotripsy. This very important paper would benefit patients a lot, if compared with the results of other urological operations.

Bone and joints

A group by Grabowski et al. from Siedlce analysed with 3-phase bone scintigraphy a large series of 83 children with hip pain. This study underlines the importance of this study in paediatric orthopedics.

In a case of histiocytosis, Pilecki et al. analysed CT/RN imaging correlations.

Angiology, lymphoscintigraphy, veno-scintigraphy

Dąbrowa et al. from Łódź showed impaired lymph circulation in a crural venous ulcer. A nice study, but, well, was the result not obvious? Stępień and colleagues (Cracow) proposed $^{99\text{m}}\text{Tc}$ -labelled-IgG as a lymphoscintigraphic agent. A fine study, but it would benefit from comparison with traditional lymphoscintigraphic radiopharmaceuticals, which was not performed.

From the same centre came an interesting paper on in-vivo-labelled erythrocytes in venous drainage disturbances. A fine study which could be promising in performing RN venography in patients with oedema.

A group by Dąbrowski et al from Łódź strongly advocates stress/rest limb MIBI scanning in lower limbs arteriosclerosis, positive well before positive Doppler US results.

Infection and inflammation

Birkenfeld and colleagues underlined the importance of HMPAO-labelled leukocyte scanning in children with unspecific colitis. Stępień and Pawlus from Cracow underlined the importance of vascular phase of $^{99\text{m}}\text{Tc}$ -IgG inflammation imaging. The focal tracer's early accumulation could be predictive for positive scans in the delayed phase.

Radiopharmaceuticals

This undoubtedly was a strong section of this Congress.

An interesting proposal of labelling DOTATATE with ^{177}Lu and ^{90}Y came from the group of Pawlak and co-workers from POLATOM. A conjugate of IgG-HYNIC could be a promising inflammation imaging agent (Michalik et al. from Warsaw), also technetium- $^{99\text{m}}$ -labelled interleukin (Karczmarczyk et al. from POLATOM).

I-123 and I-123 labelled methyl-tyrosine was synthesised by a group of Zakrzewska et al from POLATOM. An interesting studies on tumoural angiogenesis imaging by monoclonal antibodies

anti-CD61 — ^{131}I was presented by Bilski and colleagues from Warsaw. Technetium labelled recombinant human TSH could be an interesting marker for the imaging of differentiated thyroid carcinoma metastases (Byszewska et al.). Radionuclide complexes of platinum (IV) with [^{131}I / ^{131}I]histamine (papers by Maurin and Garnuszek) could be an interesting challenge in RN therapy.

A method of obtaining ^{188}Re -perrhenate was also described by Karczmarczyk.

Radioprotection and dosimetry

A series of reports on radioprotection came from the Military Institute of Hygiene and Epidemiology in Warsaw. Jaźwiński and Janiak compared absorbed doses of radiation in Army vs. Police hospitals nuclear medicine departments. Why this choice of interesting model?

Some reports were devoted to thermo-luminescence dosimetry. Rorat et al. from Cracow assessed it when applied to positron emission by ^{48}V . Well, what are the practical conclusions? Thermo-luminescence was also strongly advocated by Jaźwiński from Warsaw.

An interesting paper by Bajera and colleagues from Warsaw showed the possible negative influence of ^{131}J therapeutic-dose-administered-patients on gamma-camera acquisition parameters. Well, this is bad news for the users of small NM departments — patients walking on the corridor and blinding gammacamera rays coming through the wall.

Conclusive remarks

There were two types of news which came from this survey which can be simply divided into good and bad:

- good: despite the incredible mess created by the unfortunate reform of our health sector in Poland, nuclear medicine has survived and is scientifically productive;
- another good thing is that interesting and fresh ideas still matter, even if when competing with the increasing high-tech of the modern world's nuclear medicine;
- bad: how long time? Even in the era of high-tech, PET, ultra-modern radiopharmacy etc, etc. originality in science will not last for ever.

This is an increasing challenge for Polish nuclear medicine.