

Slovenian Interventional Radiology Departments

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Slovenia has a solid, almost completely public health system with one major insurance company. Slovenian Radiology celebrates 90 years of existence this year; Interventional Radiology (IR) is performed for longer than 40 years. No private IR facility exists at the moment. IR service is available in both University centres 24 hours/7 days and in lesser extent in 6 of the 10 general hospitals. The training is included in the radiology residency with 6 months of obligatory IR training. IR is performed by 21 out of 175 Slovenian radiologists that perform IR procedures more than 3 days/week, and some radiologists perform it occasionally. The patient's selection is made by interventional radiologists and various clinicians. Most of the patients are hospitalized on different wards. Since fall 2012 Clinical Radiology Institute of University Medical Centre (UMC) in Ljubljana provides single day hospitalization and more than 100 patients have been treated this way ever since. Also, first hybrid angio-suite in Slovenia is being installed in the same Institution.

Current negative financial trends are influencing IR and might affect its development by reducing educational, technical and human resources. There is a turf battle for IR since it is one of the most dynamic, perspective and economically important branches of Radiology. Only continuous education, solid technical equipment and adequate human resources will lead to good results, that are essential for quality patient management and IR affirmation of IR in medical and general community.

INTRODUCTION

Interventional radiology (IR) is minimally invasive therapeutic part of radiology performed under imaging guidance. Modern imaging guidance includes ultrasound (US), fluoroscopy and angiography computed tomography (CT), cone-beam CT (CBCT) and magnetic resonance (MR). IR is used for diagnostic and therapeutic procedures of vascular and non-vascular pathology and is often alternative to more invasive surgical procedures.

FUNDING AND BASIC ORGANIZATION

Slovenia has a public health system with one major public insurance company and several smaller, providing additional insurance. There is very little private initiative in radiology, mostly funded by insurance and for the moment

there is no private IR facility in Slovenia. At the moment the patient contribution in medical expenses is limited and almost non-existing in radiology. The introduction of the novel therapeutic method has to be proposed by scientific forums and has to be confirmed by the Health council at the Ministry of health so it can be later reimbursed.

SLOVENIAN INTERVENTIONAL RADIOLOGY (IR)

Slovenian Radiology started in 1923 with the installation of the first X-ray machine in Ljubljana hospital, celebrating 90 years this year [1]. A true pioneer of IR in Slovenia was Prof. Dr. Ivo Obrez, MD, who promoted it after education in USA in early 1970's and was rapidly expanding during his leadership of Radiological department in Ljubljana hospital in 1974.

The first procedures were coronarographies in collaboration with cardiologists but also peripheral arterial and non-vascular procedures. Cardiac invasive procedures were lately overtaken by invasive cardiologists though the team is still including radiographers and scrub-nurses, employed at IR of Clinical Radiology Institute in University Medical Centre (UMC) Ljubljana. Interventional radiology was introduced also in Maribor hospital as well as in Šempeter, Celje Novo mesto, Murska Sobota, Izola and Slovenj Gradec hospitals.

PRESENT ORGANIZATION OF IR IN SLOVENIA

IR training is included in the radiology residency (4+1 years) with 6 months of obligatory training with a possibility of additional IR training of maximum 12 months.

Exclusively interventional radiologists are present only in both university centres, Ljubljana and Maribor, performing also non-invasive vascular and non-vascular diagnostics. Neurointerventional and peripheral interventional radiologists are highly specialized, performing only neurologic or peripheral (+ non-vascular) interventions. 24 hours/7 days on-call service is offered in both university centres, limiting some emergency procedures only to University Medical Centre of Ljubljana (for example 24 hours/7 days stent grafting of ruptured aorta or acute aortic dissection etc). IR is performed also in 6/10 general hospitals by radiologists, involved also in other parts of radiology, sometimes in assistance with interventional radiologists from university centres. Diagnostics is mainly performed non-invasively by ultrasound, CT, MR by general radiologists; angiography is seldom used as a diagnostic tool nowadays.

There is a small community of radiologists performing IR procedures; 21 out of 175 Slovenian radiologists perform IR more than 3 days/week and some occasionally. Invasive therapy adds 8% to salary, the same as in other specialities. There are several clinical conferences where indications and treatment options are selected, the closest cooperation is between interventional radiologists, vascular surgeons and angiologists though neurologists, urologists, nephrologists, abdominal surgeons, gastroenterologists, oncologists and others patients referring physicians. Since majority of Slovenian hospitals are equipped with PACS/RIS systems, close collaboration between hospitals exists and will be even closer after completing telemedicine project.

Patients are mostly admitted to different wards inside hospitals (internal medicine, surgery, neurology, etc), since fall 2012, a one-day-long hospitalization is possible on IR department in UMC Ljubljana and more than 100 patients were treated this way up to now, being admitted from general hospitals or directly from home and released in the afternoon of the same day. In the largest Slovenian IR centre in UMC Ljubljana, 2677 peripheral vascular and non-vascular procedures were performed in 2012: 548 were diagnostic and 2129 therapeutic. Most of the procedures were vascular (1608 vascular vs. 1069 non-vascular). The most common vascular procedures out of 23 different kinds of the procedures performed, were PTA (percutaneous transluminal angioplasty) with or without stent (505); almost identical number of percutaneous nephrostomies (503) were performed, being the most common non-vascular procedure. All aortic and peripheral stent grafts in Slovenia are implanted by interventional radiologists; IR in UMC Ljubljana performed 59 abdominal and 11 thoracic stent grafts in 2012. Currently, first hybrid angio-suite in Slovenia is under construction in Clinical Radiology Institute in UMC Ljubljana and there are

many complex hybrid procedures that will be performed there following the end of 2013 along with the most complex procedure, performed today.

CURRENT DRAWBACKS FOR SLOVENIAN IR

Current economic situation is unfavourable for IR, being one of the fastest growing medical branches. New, expensive technical solutions like hybrid angio-suites as well as expensive endovascular material are necessary for modern patient management though many centres are pressured to reduce costs by management. There is also a decrease of educational funds, jeopardizing evolution of IR and interest of young radiologists for IR, especially with current threat of legal processes. Only minimal salary benefits and constant worsening of working conditions are characterize the situation. Also, different branches of medicine are interested in this important and dynamic branch of radiology. Only continuous education, the highest quality of the provided service, solid technical equipment and adequate human resources will lead to good patient management that is essential for affirmation of IR in medical and general community.

CONCLUSIONS

Interventional radiology is one of the most dynamic, perspective and economically important branches of radiology and medical and public awareness about IR should be increased. Solid regional structure and centralization of complex procedures in larger centres 24 hours/7 days are a guarantee for excellent results. Rapid development and new methods require continuous education and motivated human resources that can not be reached without efficient funding.



Figure 1.
Routine work: Thoracic stent graft implantation



Figure 2.
Routine work: Abdominal stent graft implantation

LITERATURE

- [1] Jevtič V: History of the Clinical Institute of Radiology in Ljubljana on its 80th anniversary (1923-2003), *Historia Magistra Vitae, Radiol Oncol*, 2004; 38(4) 253-67.

A SZERZŐ BEMUTATÁSA



Dimitrij Kuhelj, MD was born in 1970 in Ljubljana, where he finished primary and secondary school. He finished Medical Faculty at Ljubljana University in 1995. He started to work in University Medical Centre Ljubljana and in 2001 he finished Radiology residency. In 2002 he finished also Master in science. Since 1997 he is employed at Clinical

Radiology Institute UMC Ljubljana, currently being at the position of the Head of Interventional Radiology.

Since 2004 he has been mentoring residents in radiology and since 2005 he is an assistant at Medical faculty in Ljubljana. Since 2007 he has been the President of Slovenian Association of Radiology. He speaks actively

English, Italian and Croatian. Between 1997 and 2002 he has been member of Permanent Working Group of European Junior Doctors, he is currently a member of ESR and CIRSE.

With colleagues he introduced five new therapeutic IR methods in UMC Ljubljana and was a promoter of one-day hospital and hybrid angio suite at Clinical Radiology Institute in UMC Ljubljana. He has been an invited lecturer in more than 60 events nationally and internationally and he has been promoting radiology and interventional radiology in 12 national media events.

He is also author or co-author of seven articles with impact factor, and he published more than 20 articles in different scientific publications. He was author or co-author of 70 published abstracts and presentations.

Felújított Uroonkológiai Centrum a Semmelweis Egyetem Urológiai Klinikáján

Immár csaknem 15 éve, hogy Romics Imre professzor gondolata és irányítása alapján különálló részlegben komplex uroonkológiai ellátó részleg létesült a Semmelweis Egyetem Urológiai Klinikán.

A daganatos műtéti ellátáson kívül az óta több mint 1000 beteg gyógyszeres kezelését is elvégeztük. Hasonló átfogó onkoterápiát biztosító osztály ritka Európában, hazánkban pedig továbbra is egyedülálló létesítmény. Jövőre már négyre gyarapodik a klinikai onkológiai szakvizsgával is rendelkező urológusok száma. Tevékenységüknek köszönhetően a betegeknek a szükségessé váló kiegészítő onkológiai kezeléseik elvégzésére nem szükséges elhagyniuk az intézményt, így gondozásuk is töretlen maradhat.

Nem véletlen, hogy a klinika vezetését múlt évben átvevő Nyirády Péter professzor első tevékenységei között fogott bele az onkoterápiás részleg felújításába. Újjászületett részen a korszerű nyílászárók, vizsgáló és fürdőszobák mellé az infúziós kezeléseik elvégzésére új kezelőszékek is beszerzésre kerültek.

A jelentősen kedvezőbbé vált feltételek mellett az eddig is nagy számban végzett onkológiai gyógyszervizsgálatok is megfelelő körülmények között végezhetőek.

A megújult uroonkológiai centrumot szeptember 17-én ünnepélyes keretek között adta át Szócska Miklós, az Emberi Erőforrások Minisztériuma Egészségügyért Felelős államtitkára, Szél Ágoston a Semmelweis Egyetem rektora és Gál János általános rektorhelyettes.

Megnyitó beszédükben hangsúlyozták a komplex egészségügyi ellátás jelentőségét, és a különösen a férfi lakosságra vonatkozó megelőző-szűrő program fontosságát. Válaszában Nyirády professzor ígéretet tett a megkezdett munka folytatására.