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ANNUAL GENERAL ASSEMBLY OF THE ROYAL BELGIAN SOCIETY OF RADIOLOGY (RBRS), Tervuren, 26.01.2013

Presidential address

Dear colleagues, Dear friends,

I would like to thank you for being so numerous to attend this Congress of the "Royal Belgian Radiological Society" which will, this time, be devoted to interventional radiology.

Yet, in a few minutes, we will have a short break to honour Professor Philippe Grenier who will become a honorary member of our society. He will speak from a diagnostic point of view. However, let's not forget we are at first radiologists making a diagnosis.

It is with great pleasure that I have noticed that the unit of Prof. Grenier, and many more others, are called "Unit of diagnostic and interventional radiology" at "la Pitié Salpêtrière".

My idea, while preparing this congress, was rather quickly defined, as I asked each sector of the RBRS to give a talk about a specialised subject in its field.

Each section of the RBRS is indeed a part of the vertebral column of the RBRS ; each section is moreover very active.

In this slide, you can read an exhaustive list of all the medical treatments in interventional radiology I have made. It is not only about vascular treatments as non vascular ones make up more than the half of the treatments in question.

I will of course not read that list : you just have to notice I have made a list of 137 treatments or group of treatments, Every year, new ones are created.

The interventional radiology has established its pedigree throughout the years, since the beginning by Charles Dotter who described the first angioplasty in 1964. Meanwhile, we have come a long way : the guiding systems have become more sophisticated and the equipment companies have on their side developed incredible tools. The collaboration with these companies is excellent and I thank them for their presence today.

As the RBRS is going to be revised and updated soon – I will have a word about it at the end of the program – we can already consider renaming the "Royal Belgian Radiological Society" Diagnostic & Interventional. Like its national Belgian Journal.

Another pioneer of interventional radiology in our country is Professor Julien Struyven, whom I hand over to.

Before listening to him, let me quote one of our masters in Interventional Radiology, Professor Francis Joffre, who said :

"A radiologist who does not perform interventional treatments is a one-legged man"

Jean-François De Wispelaere,
President RBRS 2012

2012 Honorary Membership Nominees: Prof. Ph Grenier and Prof. J. Struyven

During the general assembly, President De Wispelaere eulogized the two nominees as Honorary Members if the Royal Belgian Radiological Society in 2013: Professor Philippe Grenier from Paris. and Prof. Julien Struyven from Brussels.

Dear Colleagues,

We will not honour Professor Jacques Pringot today, though we had chosen him to become a member of honour of the RBSR. Because of a health problem, he has decided,

Pr Ph Grenier (left) receiving the Honorary Membership diploma from President J.F. De Wispelaere.

although he is among us, to turn down the invitation and to postpone the ceremony and his talk will take place during our next congress in November.

I straightaway ask the president of our next congress Bob Hermans, to praise Jacques Pringot, who is a mainstay of the RBSR , as he has been for many years now, the editor of the JBR-BTR, which is well listed in the radiological literature.

He has also had an incredible career which we will relate in November.

Is it necessary to introduce Professor Philippe Grenier who has been a role model in thoracic radiology ?

The articles and books he wrote about that subject were of a major help during my training course.

Philippe A. Grenier is full Professor of Radiology at the University Pierre & Marie Curie, Chairman of the Department of Radiology and Head of the Medical Board at Pitié-Salpêtrière Hospital, Paris, France.

Professor P.Grenier received his medical degree in 1972 and began his career at Beaujon Hospital, Medical School Xavier Bichat, where he was appointed Professor of radiology From there, he went to the Medical School of Bobigny, as professor of radiology in 1988, before accepting his present position as professor of radiology at Pierre & Marie Curie University. Since 1990, he has been chairman of the department of diagnostic radiology at Pitié-Salpêtrière Hospital in Paris, and has served as Head of the Medical Board of the hospital since 2007 when he was elected. He was also appointed Vice-President of the University from 1998 to 2001.

A pioneer in the diagnosis of chronic airway disease and diffuse infiltrative lung disease using high-resolution CT, Pr Grenier is still contributing to the evaluation of chest disease with multislice CT and MR. Our colleague is a respected expert in chest imaging and respiratory disease, author or coauthor of about 215 peer-reviewed articles, 70 book chapters and publisher of 5 books, .

Member of the editorial boards of European Radiology, Journal of Thoracic Imaging and Academic Radiology, Pr Grenier has reviewed for several national and international scientific journals on medical imaging and respiratory diseases. He has given invited lectures in 170 international scientific meetings or universities (with today's one, 171). He has also obtained 12 grants for research and several awards for scientific exhibitions and outstanding scientific research from international societies.

Actively involved in the organization of the European Congress of Radiology from the beginning, he was president of ECR 2002 and chaired successively the Committee for Subspecialties and the Committee for Education of the European Association of Radiology. He received the gold medal of European Congress and Association of Radiology in 2007.

Dr Grenier went one step further and became president in 2003 of the prestigious Fleischner Society,(after the name of its founder Felix Fleischner, probably Dr Grenier's mentor) an international multidisciplinary group dedicated to chest disease, in which he was elected a member more than 20 years ago. He was a founding member of the European Society of Thoracic Imaging, the general secretary of this society for 8 years, and president in 2008. He also served as chairman of the RSNA International Advisory Committee from 2010 to 2012. He received Honorary Membership from the RSNA and Honorary Fellowship from the Royal College of Radiologists. Afterwards, he also received Honorary Membership from the Swedish, Japanese, Austrian, Italian, Argentinian and French Canadian Societies of Radiology.

This is the reason why it is a great honour for me to confer on him the title of Honorary Membership from the RBSR.

J.F. De Wispelaere,
President RBRS 2012

Dear Colleagues, Ladies, Gentlemen,

Let me start first by saying, from the bottom of my heart, all my warm thanks to my friend and colleague Jean François De Wispelaere for inviting me during this official ceremony to praise Professor Struyven who has been my master.

Julien Struyven was born in November 1937 and as a real Belgian citizen and according to his bilingual educational background, he belongs to the two communities of our Country.

He graduated in 1965 as a doctor of the ULB Brussels Free University. His interventional orientation, after a short detour in surgery, brought him eventually on the right track, (I mean) Radiology.

He was recognized as a radiologist in 1969 but he had been long before a precursor of cardiovascular imaging in Belgium, since he started to make angiographies in 1966. After a training in the US, he performed the first coronarography done in Belgium in 1969.

Pioneer of different techniques he performed several first surgeries in Belgium: the first embolisation in 1974, the first dilatation in 1979 and the first coronary dilatation in 1980.

After his work at Saint Pierre and Brugman Brussels hospitals, he took the head of the radiology department of the newly created Erasmus Hospital of the Free Brussels University.

For several years, he gave a rare energy and a flawless enthusiasm which allowed the radiology department to expand together with the hospital, moving from 30 up to 900 beds. He acquired an indisputable

Pr J. Struyven eulogized by Dr Chr. Delcour.

scientific reputation testified by the many publications originating from its department.

In 1984 he was appointed Ordinary Professor in radiology in the ULB and he launched a school to which I am proud to belong.

Professor Struyven is also the author and co-author of more than 250 articles listed in Medline, and numerous books chapters. He also has been a great communicator, having given more than 500 lectures and being an invited orator for more than150 times.

Besides a brilliant academic career, he has been a formidable entrepreneur, managing the radiology development in Belgium and being an active member of our Society as Chairman and Secretary General during several years. He is still today member of the Executive Committee and is in charge of the web site.

He has been a key interlocutor in various official Bodies having played a role in the Belgian radiology development: member of the CTM-TGR of the INAMI-RIZIV, member of the Superior Health Committee, member of the Quality Promotion National Committee, chairman of the Radiology Accreditation Commission, founder and chairman of the Consilium Radiologicum and chairman of the Imaging College.

His international career is brilliant.

Professor Struyven is an honorific member of various radiology societies all over the world.

The CIRSE, Cardio Vascular and Interventional Radiological Society of Europe, would not be what it is presently without the contribution of Julien Struyven who has been at the origin of its creation made through the merging of two separate societies: the European College of Angiography and the European Society of Cardiovascular Radiology.

In 1990 he organised in Brussels the annual meeting of the CIRSE and later on became its Chairman leaving his mark.

On his impulse the CIRSE developed itself in a very impressive way with an exponential increase of the number of its members. It also got organised in an exemplary way becoming a representative European body in the field of interventional radiology and building a very high level European teaching structure.

In addition to Professor Struyven's numerous academic merits that I just tried to summarize, he is also very endearing, profoundly human and at the service of others.

Endowed with a good sense of humour he is a great knowledgeable modern art lover with a genuine passion.

I definitely could not finish his portrait without thanking him personally because I would never have been what I became, professionally as well as personally, if I had not the opportunity and the privilege to know him.

On behalf of all the present participants, it is an honour for me to thank Professor Julien Struyven for his exceptional contribution to the development of our Speciality. I ask you to applaud him warmly.

Christian Delcour

President-Elect address

Dear colleagues,

It is a great honor to serve as your president for the year 2013.

As you know, we are currently working on a reorganization of the different radiological societies. This projects aims at a more efficient communication and interaction between radiologists and other stakeholders in the Belgian social security, which is important to safeguard and improve our professional position.

Until this project is finalized, the Royal Belgian Radiological Society will continue to work as a scientific society, in close collaboration with the NUR-UNR and the concilium radiologicum. Apart from protecting our professional interests, similar attention needs to be given to training, education and scientific work in radiology. The RBRS is doing important work in this regard, not in the least via the different scientific sections of the society. Education and fostering of scientific work will remain an important purpose, also within a unified society structure.

As the new 2013 president, I have the honor to organize the next annual symposium. I would like to take the occasion to announce this symposium, which will take place on November 16th 2013, in Leuven. The main topic of this symposium will be head and neck imaging.

Prof. Dr. Robert Hermans,
President RBRS 2013

Closing address

We have now arrived at the end of the scientific part of this symposium. This walk through interventional radiology was extremely enriching and brings the proof so necessary that interventional radiology interests all the fields.

On the initiative of Christian Delcour, several among us collaborated in the drafting of a memo intended for the competent jurisdictions concerning the problems of the acts in interventional radiology and overall for its financing.

Why interventional radiology is pointing in the services of radiology? Quite simply because it costs money, whereas the other subspecialities of radiology are correctly refunded. The principal element which explains why interventional radiology does not even bring in money costs some is its system of financing.

To pay necessary equipment and staff the radiologist must more or less refund 70% of honorary with the current system of financing, whereas an identical room installed to the surgical district is financed differently: the surgeon having to reassign only 10 to 20% (great maximum) of his fees.

It is thus a completely unfair situation that we have denounced for a long time,and which was clearly expressed in a note given to the cabinet of Laurette Onkelinx last year. The idea would be to finance the room of interventional radiology like an operating room, setting up equality of surgeons and radiologists.

Our French friends go further in the organization of interventional radiology or at least in a proposal : the services offered in IR could be divided into two or three groups and the financing in proportion to the services offered. That supposes obviously policy options, because one cannot do all by all and correctly. That must also pass by a specific recognition of a training in interventional radiology. But there one is still far from the account! Nevertheless this idea must make its way and must be held in the spirit during the discussions.

I transmitted to you not later that yesterday an answer of the Minister for health Mrs Laurette Onkelinx, to a well justified anger on behalf of group BELMIP. BELMIP stands for Medical Belgium Imaging Platform exit of the old “Marchal group”. BELMIP gathers all living strength in medical imaging including nuclear medecine, technologists and nuclear federal agency of control.

This response of Mrs Onkelinx to the claims of radiological is encouraging and we will not fail to keep you informed of the evolution.

What will become of the RBRS, we are currently in the last straight line of merging with the National Union of the Radiologists (UNR-NUR) and Consilium Radiologicum?

You thus see that the future is not so dark for interventional radiology and radiology in general, but that there is still much work to do.

There is a need for volunteers but especially for the renewal of these volunteers by motivated young people, because one cannot make only scientific radiology. Our beefsteak also should be defended. The Belgian society of Radiology must thus become the newsgroup and the think tank for the future of Belgian radiology.

Jean-François De Wispelaere,
President RBRS 2012

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ABSTRACTS OF PAPERS
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voorgesteld aan het Jaarlijks Symposium van de KBVR, op 26 januari 2013
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Transthoracic biopsy of lung lesions: an update

J. Coolen, W. De Wever, J. Bogaert, J. Verschakelen[1]

Since the first reports of needle biopsy of the lung in the late 1800s, improving technologies in needle design (fine needle aspiration (FNA) and coaxial (CORE) biopsy) and radiologic equipment (Scopy, Computer Tomography, CT-Fluoroscopy (CTF), C-arm Cone-Beam CT, Ultra-Sonography and Magnetic Resonance Imaging) have helped secure the place of tissue biopsies of suspicious pulmonary lesions under radiologic visual control.

In general, percutaneous tissue sampling of a pulmonary, pleural or mediastinal lesion is performed when the diagnosis cannot be established by bronchoscopic techniques, or when histological diagnosis will modify staging of the disease or when therapeutic strategy will be influenced. Relative contraindications are severe bullous emphysema at the puncture site, uncorrectable coagulopathy, severe pulmonary hypertension, highly vascular masses or unilateral lung.

There are multiple factors affecting the diagnostic accuracy of this procedure. Besides correct needle position, lesion size and puncture technique/modality, also operator experience and presence of the pathologist on site are important factors.

For pleural based lesions we sometimes use a US-guided procedure, but for the most commonly performed transthoracic biopsy procedures, we choose for CTF-guided CORE biopsies. This real-time method shows the exact needle trajectory during needle advancement, but the major drawback are dose related problems.

The most common complications are pneumothorax and haemorrhage. The predictor for risk of pneumothorax is lesion depth. Other factors are needle size, puncture angle, patient age, increased number of passes through the pleura, presence of COPD. The risk of bleeding is also increased in centrally located lesions and decreases with increasing lesion size, but is usually self-limiting if platelets and prothrombin level are normal. Air embolism and seeding of the tract are very rare complications.

The incidence of complications can be reduced by interlacing a streamlined procedure, where a checklist is helpful: including a correct application form with indication of biopsy, pre-biopsy control of contra-indications, available informed consent indication patient cooperation, and delayed CXR chest after 4 hours before hospital discharge.

For the correct indications, transthoracic needle biopsy is a good procedure when tissue is an issue. The choice of procedure technique (FNA versus CORE biopsy) and modality depends on variables such as cost and availability. Computer tomographic fluoroscopy can be an appropriate technique for transthoracic procedures. Because this technique s compliance with occupational limits of dose, the use of low dose protocols and possible hardware dose reduction techniques (such as HandCARE©) are warranted. Measuring and evaluating scan doses gives knowledge and brings responsibility. Accuracy of correct sample can be augmented by evaluate previous examinations; PET avid and diffusion weighted restricted zones are more suspicious for malignancy.

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The value of CT in the pre- and post-procedural assessment of the aortic root in transcatheter aortic valve replacement

R. Salgado[1], O. Ghekiere[2]

Severe aortic valve stenosis is the most frequent valvular heart disease in industrialized nations, affecting almost exclusively the elderly population. Approximately 2-3% of the population over the age of 75 has severe aortic valve stenosis, a progressive disease than when symptomatic is associated with a high degree of mortality.

Elective surgical aortic valve replacement is considered the most effective treatment for advanced disease, significantly improving symptoms and survival compared to those who refused or couldn't have surgery.

Unfortunately, not all patients are eligible for surgery. Several studies have identified various subgroups of patients who have a substantially elevated risk for operative complications or death. As such, some series have reported that up to 32% of patients with severe aortic valve stenosis can't have surgical aortic valve replacement for a variety of reasons. Therefore, a less invasive approach is needed for this subgroup of patients in order to offer a possible definite treatment.

In recent years, specific aortic valve prostheses have been developed that can be transported to the aortic root using a non-surgical endovascular or percutaneous transapical approach. Once in place, these bioprosthetic valves functionally replace the native valve by displacing it to the aortic root wall. Given their less invasive nature these procedures are less demanding on patients and can therefore be applied in the specified non-surgical subgroup. This procedure is named *trancatheter aortic valve replacement* or *implantation* (TAVR, TAVI) or *percutaneous aortic valve replacement* (PAVR). Recently published data from individual centers, large prospective studies, observational registries and multicenter randomized, controlled trials have validated the efficacy of this procedure in patients with severe aortic valve stenosis, both in the high-risk surgical cohort (PARTNER A) as in the subgroup deemed to be too high-risk for con-

ventional surgery (PARTNER B). These favorable outcomes with diminished symptoms and prolonged survival, has lead to the success and increasingly widespread performance of this intervention.

Nevertheless, not every patient can receive such a device. Besides the clinical selection, certain technical and anatomic criteria have to be met, and it is in this respect that non-invasive imaging techniques play a crucial role in the selection and further pre-operative work-up of patients.

CT can offer valuable information regarding annulus size, in order to determine if the annulus size of the patients falls within the size range of available transcatheter valves. It also allows proper evaluation of the femoral and subclavian arteries for access evaluation. Finally, CT can adequately visualize the position of the implanted prosthetic valve and its expansion in the aortic root.

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How to get the most out of visualizing airways and lung disease with CT?

Ph A. Grenier[1]

By using thin collimation and helical volumetric acquisition over the entire lung during a single breath hold Multidetector Computed Tomography (MDCT) provides high-resolution volumetric data set, based on voxels of small volume having cubic or almost cubic dimensions. This offers the advantage of multiplanar reformations of a very high quality. Coronal oblique reformations along the long axis of the trachea are well adapted for the assessment of proximal airways (trachea and mainstem bronchi). Volume averaging permits to select a slab of thickness adapted to include more proximal airways in the image, on which minimum intensity projection (minIP) may be applied to blurr the vessels. Virtual endoscopy consists in a three-dimensional (3D) internal rendering of airways providing a view in perspective of the inner surface of the airway. CT bronchography consists in a 3D external rendering of the air content of the airways. These different post-processing techniques may be applied in combination for a better assessment of tracheobronchial lesions. This is particularly appreciated in case of airway lesion of complex anatomy or to assess tracheal stenosis (post-intubation, malignant, inflammatory).

The detection of any endobronchial abnormality is improved by the visualization of overlapped thin axial images in a dynamic mode, moving up and down through the volume, to check the lumen of all bronchi from their origin to their distal divisions. This allows not to miss an endobronchial tumor (benign or malignant) and to detect any postinfectious or inflammatory focal bronchial stenosis or broncholithiasis.

Thin collimation MDCT is regarded as the current gold standard imaging technique for the diagnosis and extent assessment of bronchiectasis. It is superior to HRCT with 10-mm intervals and provides multiplanar reformations that increase the detection rate of bronchiectasis, the readers' confidence as to the distribution of bronchiectasis and improve agreement between observers as to the diagnosis of bronchiectasis. Reformations of images along the long axis of the airways, selected by using the swivel mode, and on which minIP is applied, help assess the extent of bronchiectasis at the segmental level and the number of generations of bronchial divisions involved. The extent of decreased lung attenuation reflects the extent of obliterative bronchiolitis associated with bronchiectasis and remains the strongest determinant of airflow obstruction in these patients. Complementary expiratory CT using low dose may be increase the perception of mosaic perfusion pattern. Focal areas of expiratory air trapping may be displayed on thick coronal and sagittal reformatted slabs with minIP making feasible a semi-quantitative evaluation of air trapping extent.

In patients with bronchiectasis, the use of maximum intensity projection (MIP) is recommended in order to improve the detection of foci of infectious bronchiolitis recognized as tree in bud sign. MIP is also appreciated in case of non specific centrilobular nodular pattern in order to visualize linear branching opacities connected to these small nodules (tree in bud sign) leading to the diagnosis of infectious bronchiolitis. MIP may also increase the sensitivity of MDCT in detecting non infectious inflammatory bronchiolitis such as respiratory bronchiolitis in smokers or follicular bronchiolitis in collagen vascular disease.

In patients with COPD, the assessment of proximal airways is recommended as bronchial wall thickening, bronchial diverticulas, cylindrical bronchiectasis and tracheobronchomalacia are markers of clinical severity of the disease.

As the interobserver variability in the assessment of bronchial wall thickening in patients with obstructive lung disease is significant, specific softwares have been developed for quantitative analysis of bronchial wall thickness. Using such softwares,

investigators have demonstrated that in COPD patients bronchial wall thickness and extent of emphysema are both the strongest determinants of FEV1 and are associated with COPD exacerbation frequency. In asthma, bronchial wall thickening correlates with pathologic measures of remodelling and with asthma severity and asthma control. In patients with bronchiectasis, the bronchial wall thickening on the baseline CT correlates with functional deterioration overtime, and severe bronchial thickness is the most adverse prognostic determinant.

In diffuse infiltrative lung disease, high-resolution CT with 1-mm thick section obtained at 10-mm intervals has been widely accepted as the imaging standard of reference for assessing diffuse lung disease. However only approximately 10% of the lung parenchyma is scanned and characteristic foci of the disease may be missed. Volumetric and multidetector HRCT offers several advantages: 1) complete imaging of the lungs and thorax, 2) viewing of contiguous slices for the purpose of better defining lung abnormalities, 3) reconstruction of scan data in any plane and/or using MIPs or minIPs, and 4) precise level-by-level comparison of studies obtained at different times for evaluation of disease progression or improvement. MIPs increase the detection and the profusion assessment and characterization of nodular pattern and improve the assessment of the size and distribution of pulmonary vessels. In interstitial lung disease with fibrosis, minIPs improve the recognition of traction bronchiectasis and bronchiolectasis, ensure the distinction between traction bronchiolectasis and honeycombing, and may detect airway distortion before airway dilatation. It also increases the visualization of honeycombing, lung cysts, ground glass opacity, interlobular septal thickening and peribronchial infiltration. The use of volumetric multidetector HRCT however results in a greater radiation dose that does spaced axial imaging. On the other hand, radiation dose may be dramatically reduced without loss of significant information by using iterative reconstruction techniques, adaptation of acquisition and reconstruction parameters, and postprocessing techniques.

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Diagnosis and treatment of endoleaks after endovascular repair of thoracic and abdominal aortic aneurysms

S. Heye

A common complication of endovascular repair of a thoracic or abdominal aortic aneurysm (TEVAR – EVAR) is an endoleak occurring in up to 30% of cases. Endoleak is defined as the persistence of blood flow outside the lumen of the endoprosthesis, but within the aneurysm sac and can be classified into 5 categories, depending on the blood flow into the aneurysm sac. Typical features of the different types of endoleaks are discussed as well as the imaging modalities to detect and classify an endoleak and the diverse (endovascular) treatment options.