JBR–BTR, 2013, 96: 104-105.

NEWS FROM THE UNIVERSITIES

8th SCIENTIFIC PRIZE EM. PROF. DR A.L. BAERT

Op 4 december 2012 vond, in aanwezigheid van rector Prof. Dr. M. Waer, meerdere ere-rectoren en talrijke andere hoogleraren o.m. van de KU Leuven, de U Antwerpen, de U Gent, de U Liège en de VU Brussel de inhuldiging plaats van het "Fonds em. Prof. Dr. A.L. Baert" in de rectorale salons van de Universiteitshallen.

Dit fonds wordt nu beheerd door het Leuvens Universiteitsfonds en zal de "Wetenschappelijke Prijs em. Prof. Dr. A.L. Baert", opgericht in 1997, verderzetten.

De laureaten van deze Prijs zijn: Robert Hermans, Marc Lemmerling en Lieven Van Hoe (1998), Johan Van Goethem (2000), Michel De Maeseneer (2002), Steven Dymarkowski (2004), Mireille Van Goethem (2006), Geert Maleux (2008) en Chantal Van Ongeval (2010).

De doelstelling van het fonds blijft de ondersteuning en bevordering van wetenschappelijk onderzoek in de radiologie. Daartoe zal er ook in de toekomst een tweejaarlijkse prijs toegekend worden aan een radioloog, opgeleid aan één van de vier Nederlandstalige universiteiten in België, op basis van een met goed gevolg verdedigde doctoraatsthesis.

Dit jaar is Bert De Foer de laureaat van de 8ste Prijs. Hij behaalde zijn diploma van doctor in de genees-, heel- en verloskunde aan de KU Leuven en in 1995 werd hij erkend als geneesheer-specialist in röntgendiagnose aan de KU Leuven (onder leiding van Prof. Dr. A.L. Baert). Daarna volgde hij nog een bijkomende opleiding magnetische resonantie aan de Universiteit Antwerpen (onder leiding van Prof. Dr. P. Parizel) en was hij als radiologie actief in het regionaal ziekenhuis Zeeuws-Vlaanderen in Terneuzen. Sedert 1997 is hij staflid radiologie in het Sint-Augustinusziekenhuis in Antwerpen. Hij is er ook verantwoordelijk voor de hoofd- en halsradiologie. In 2011 behaalde hij de graad van doctor in de Biomedische Wetenschappen aan de KU Leuven met een proefschrift getiteld: "The value of magnetic resonance imaging in the preoperative evaluation and the postoperative follow-up of middle ear cholesteatoma".

De KU Leuven en de oprichters van het "Fonds em. Prof. Dr. A.L. Baert" willen de talrijke schenkers van harte danken voor hun gift, zonder de welke dit initiatief niet mogelijk zou geweest zijn. Dankzij de financiële steun van vele Vlaamse radiologen en oud-assistenten enerzijds en de sponsoring van meerdere ondernemingen anderzijds zal het fonds in de komende jaren de Vlaamse radiologie verder op het voorplan kunnen brengen door wetenschappelijk onderzoek te stimuleren.

Mocht u nog wensen een bijdrage te doen, kan u uw gift storten op de volgende rekening van de KU Leuven BE48 5583 9126 0027 met als mededeling OF0-KAP006-P3367

Namens de oprichters van het Fonds em. Prof. Dr. A. Baert,

Prof. Dr. Ph. Demaerel
Beheerder
Fonds em. Prof. Dr. A. Baert

Em. Prof. Dr. A.L. Baert
Voorzitter van de Jury

Prof.Dr. Ph. Demaerel
Secretaris van de Jury
Dienst radiologie, UZ Leuven

ANNOUNCEMENT

De **9de Wetenschappelijke Prijs van het Fonds em. Professor Dr A.L. Baert** zal uitgereikt worden in 2014. Kandidaten moeten hun werk samen met hun curriculum vitae indienen in 6 gedrukte exemplaren bij de secretaris en 1gedrukt exemplaar bij Prof. Dr. A.L. Baert, uiterlijk op 30 september 2014. Slechts werken die minder dan 2 jaar oud zijn op de datum van hun indiening kunnen in aanmerking genomen worden. Het werk moet opgesteld zijn in het Nederlands of in het Engels, met in beide gevallen, een uitgebreide samenvatting van minstens 15 bladzijden in het Nederlands (ca. 47 regels per blz.).

Fig. 1. — Plechtige inhuldiging van het Fonds em. Professor dr. A.L. Baert: links: Philippe Demaerel, Voorzitter van het Departement Beeldvorming & Pathologie, KU Leuven, midden: Minne Casteels, Vice Rector Biomedischel Wetenschappen, KU Leuven, rechts: Albert L. Baert, em. Professor Radiologie, KU Leuven.

Fig. 2. — Bert De Foer, laureaat van de 8ste Prijs em. Prof. Dr. A.L. Baert, ontvangt de Prijs uit handen van em. Prof. Dr. A.L. Baert.

JBR–BTR, 2013, 96: 106-107.

THE VALUE OF MAGNETIC RESONANCE IMAGING IN THE PREOPERATIVE EVALUATION AND THE POSTOPERATIVE FOLLOW-UP OF MIDDLE EAR CHOLESTEATOMA[1]

B. De Foer[2]

The purpose of this thesis was to evaluate the role of Magnetic Resonance (MR) imaging, especially Diffusion-Weighted (DW) MR imaging in the preoperative evaluation of cholesteatoma patients and the postoperative follow-up of cholesteatoma patients. Regarding the use of DW MR imaging, difference should be made between Echo Planar (EP) DW sequences and non-EP DW sequences.

The conclusion of this first (EP DW) study phase is that the combination of standard MR sequences before and after intravenous administration of gadolinium and EP DW sequences appears to have the highest sensitivity in detecting middle ear cholesteatoma and the size limit for detection of cholesteatoma using EP DW sequences is 5 mm. This makes EP DW sequences useless for the evaluation of the usually very small pre-second-look residual cholesteatoma in patients after CWU tympanoplasty and after PBOT (1). EP DW sequences can be used to evaluate patients prior to first-stage surgery taking into account that lesions smaller than 5 mm will be missed and that empty or evacuated retraction pockets display no high signal on DW sequences (1). These conclusions have been confirmed in several other papers in peer-reviewed journals (2, 3).

In the second study phase, the combined protocol was changed. The standard sequences have been adjusted to delayed gadolinium-enhanced T1-weighted imaging, based upon the work of Marc Williams and Denis Ayache (4). This means that imaging is performed 45 minutes after the intravenous administration of gadolinium. Immediate scanning after intravenous administration of gadolinium might result in FP findings as scar tissue and granulation tissue take time to enhance.

The DW sequence has been changed from an EP DW sequence to a non-EP based DW sequence. The sequence we use is a single-shot turbo SE DW MR imaging sequence or half-Fourier acquisition single-shot turbo SE (HASTE) DW MR imaging sequence.

This sequence has a thinner slice thickness, a higher resolution and a complete lack of air-bone interface artefacts in the temporal bone resulting in a possible capability of detecting smaller cholesteatoma (5).

Fifty-seven patients clinically suspected of having an acquired cholesteatoma and 63 patients prior to second-look surgery were included.

It was concluded that there was no statistical significant difference between the non-EP DW sequence alone and the combination of non-EP DW imaging sequence and delayed gadolinium-enhanced T1-weighted sequences.

MR imaging in patients suspected of having middle ear cholesteatoma can be applied by using only a non-EP DW imaging sequence, avoiding the need for further contrast agent administration. Also non-EP DW imaging sequences have significantly higher sensitivity, specificity, PPV, and NPV than delayed gadolinium-enhanced T1-weighted sequences, and results are less dependent on the observer's experience (6).

The imaging approach of middle ear cholesteatoma has changed significantly during the last decade (7).

Whereas at the onset, CT scan was regarded as the only valid imaging tool for the evaluation of middle ear cholesteatoma (8), MRI has conquered its place in the evaluation of patients presenting with middle ear cholesteatoma (7).

In patients prior to first-stage surgery presenting with a clinically evident cholesteatoma, CT scan has its place in the evaluation of ossicular erosion and tegmen integrity. It will also highlight temporal bone anatomy such as degree of aeration and position of facial nerve and possible dehiscence (7, 8).

However in patients with an unclear clinical history and a doubtful micro-otoscopy, MRI using non-EP DW sequences can be used as a screening tool to evaluate the presence of cholesteatoma. In those cases, MRI –using non-EP DW sequences- should be preferred as the primary imaging tool (7).

In case of an infected cholesteatoma or a cholesteatoma with clinical suspicion of associated complications MR imaging, using the combination of non-EP DW sequence and delayed gadolinium-enhanced T1-weighted sequences, is required in order to evaluate the middle ear, inner ear and middle fossa.

In both last subgroups, CT scan is reserved for the immediate pre-operative setting to evaluate all anatomical detail (7).

The role of MR imaging and non-EP DW sequences more specifically has gained even more importance in the evaluation of patients prior to second-look evaluating the presence of residual cholesteatoma or in the evaluation of patients looking for recurrent cholesteatoma (9). It is clear that EP DW sequences have been abandoned and that non-EP DW sequences are to be preferred due to their higher imaging matrix, thinner slices and complete lack of susceptibility artefacts (5, 7, 9).

ADC maps also seem to have an advantage in differentiating cholesteatoma from post-operative tissue, scar tissue, inflammation and/or cholesterol granuloma as cholesteatoma is the only entity with a clear signal drop on ADC maps (10).

CT can no longer be used as the primary imaging tool of patients in a pre-second look setting. Moreover, second-look surgery should preferably be replaced by MRI using non-EP DW sequences. CT scan should be reserved for the immediate pre-operative evaluation of these patients and selection of second-look should be performed based upon MRI using non-EP DW sequences (6, 7).

By doing so, the number of unnecessary second-look interventions can be reduced as well as the high number of useless CT scans prior to

1. Submitted and presented in fulfillment of the requirements for the degree of "Doctor in de Biomedische Wetenschappen on November 14, 2013.

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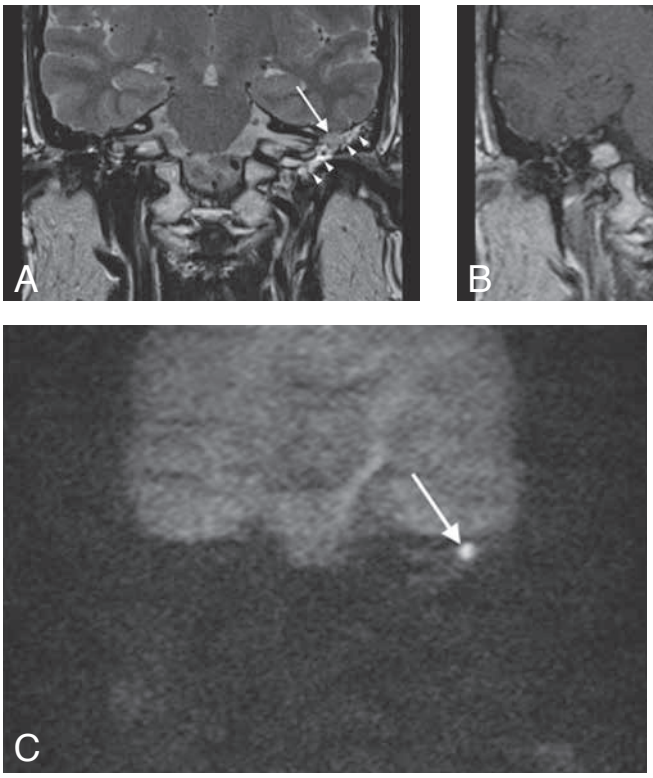

Fig. 1. — Coronal MR imaging of an attical cholesteatoma in the left middle ear with surrounding inflammation in a 42-year-old man.

Turbo SE T2-weighted image shows a moderately intense nodular lesion (arrow) underneath the left temporal lobe in the left temporal bone. Note the surrounding soft tissues with high signal intensity in the mastoid and middle ear (arrowheads). B. Delayed gadolinium-enhanced SE T1-weighted image shows the unenhancing cholesteatoma (arrow) surrounded by enhancing inflammation in middle ear and mastoid (arrowheads). C. Single-shot turbo SE DW sequence image shows the cholesteatoma as a small hyperintense lesion in the signal void of the left temporal bone (arrow).

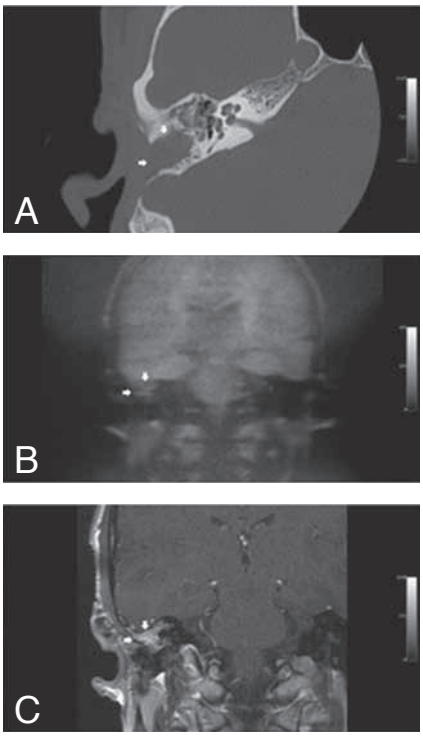

Fig. 2. — A 35-year-old man evaluated 12 months after first-stage cholesteatoma surgery before second look surgery. Second-look surgery demonstrated postoperative and inflammatory changes without any evidence of residual cholesteatoma.

A. Axial CT scan. A status after CWU mastoidectomy is noted. Complete opacification of the postoperative cavity can be found (arrows). No differentiation of these soft tissues can be made. B. Coronal turbo SE DW sequence. No clear nodular hyperintense lesions can be observed excluding any residual cholesteatoma. Note the moderate intense signal of the inflammatory and postoperative changes in the cavity (arrows). C. Coronal delayed gadolinium-enhanced T1-weighted image. Enhancement of the inflammatory and postoperative changes in the cavity can be noted (arrows).

second-look surgery, thus reducing patients irradiation significantly.

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