Emerging neuroradiological topics in journals from related societies

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In September 2016, Prof. Nagara Tamaki stepped down after six years as Editor-in-Chief of the *Japanese Journal of Radiology* (JJR), the official journal of the Japan Society of Radiology. Due in no small part to the considerable efforts of Prof. Tamaki, the JJR has shown tremendous progress in recent years, and is now considered an established international journal in the field of radiology. Indeed, there were nearly 600 submissions to the JJR in 2015. Therefore, our role, as the new editorial board—which has only just started its work—is to maintain the legacy of Prof. Tamaki's editorship and to ensure that the journal continues to progress over the next three years.

We expect that the JJR will achieve an impact factor of more than 1.0 in the upcoming year due to the outstanding work of Prof. Tamaki and the previous editorial board members, but we also aim to drive the impact factor of the JJR still higher. The new editorial board members believe that it is important to inform JJR readers and potential future authors of JJR articles about emerging topics in journals from related societies. On this occasion, we have selected some studies in the field of neuroradiology that have been published in the official journal of the Japanese Society of Magnetic Resonance in Medicine, *Magnetic Resonance in Medical Sciences* (MRMS). We chose this journal because there are many new key concepts or innovative techniques that are suitable for clinical application

but have received little attention from the academic radiological community thus far:

Diffusion-based thermometry of ventricular temperatures. Kuriyama et al. reported that the ventricular temperature was higher in an idiopathic normal-pressure hydrocephalus group than in an age-matched control group, and they found that shunting increased this temperature elevation [1]. The brain produces intense heat as a result of cerebral metabolism and cerebral blood flow, and this heat is removed mainly via the circulation of cerebrospinal fluid and of blood through the intracranial vessels. The results of this study should encourage the evaluation of various cerebral diseases from a new perspective: temperature.

Verification of diffusion tensor imaging results using 3D information from the cleared brain. Diffusion tensor imaging is clinically widespread, even though studies aiming to histologically verify the results of this technique in 3D space are rare. Kamagata et al. reported a smart solution to this problem [2, 3]: they used a cleared (transparent) animal brain and two-photon microscopy to verify the data obtained from diffusion tensor imaging and the delineation of white-matter structures. The use of a cleared brain may be the key to histologically verifying diffusion tensor imaging.

Inner-ear imaging using 3D-FLAIR. The utility of 3D-FLAIR (fluid-attenuated inversion recovery) sequences in neuroimaging is widely accepted [4]. Heavily T2-weighted 3D-FLAIR is especially sensitive to subtle alterations of fluid composition [5]. This sequence is particularly useful for the visualization of endolymphatic hydrops in patients with Ménière's disease [6].

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Gadolinium deposition in brain. The deposition of gadolinium-based contrast agents (GBCAs) in the brains of patients without renal insufficiency is a hot topic in the field of neuroradiology [7, 8]. It is still unclear how GBCA penetrates the blood–brain barrier and is deposited in the brain. The glymphatic system is a waste clearance system for the brain, and the entry points for this system are the perivascular spaces. It has been reported that cerebrospinal fluid and perivascular spaces are enhanced in healthy subjects after 4 h of intravenous GBCA administration [9]. This study may open the door to imaging-based evaluations of the glymphatic system in human subjects.

These core concepts, which originated in Japan, should be shared with the readers of the JJR. A knowledge of these core concepts and innovative technologies will allow readers of the JJR to devise novel clinical applications based on these core concepts.

Yukunori Korogi, Editor-in-Chief
Shinji Naganawa, Associate Editor

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