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## EDITORIAL

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# Paediatric Imaging

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Greetings from the Editorial Board of HKJR.

I am pleased to present the third issue of Volume 19 of the Journal, which has a specific theme: paediatric imaging.

In this issue, although there are pictorial reviews, original articles, and a case report that focus on the specific imaging features of a number of paediatric conditions, radiation protection remains an important and probably the hottest topic in paediatric radiology practice.

The original article by Lau et al<sup>1</sup> investigates the cumulative radiation dose from multiple radiography exposures in preterm infants during hospitalisation. Not unexpectedly, preterm babies with lower gestational age (GA) and longer hospital stay generally received a higher radiation dose from diagnostic radiography. Highest radiation exposure was evident in those with GA of <28 weeks and those who required surgery due to necrotising enterocolitis; the overall dose risk for development of cancer from multiple radiography nonetheless remains negligible. Another original article by Au et al<sup>2</sup> demonstrates how implementation of radiation reduction measures can successfully reduce the radiation dose by >20% when undergoing fluoroscopic micturating cystourethrogram in a local tertiary hospital.

One of the highlights in this issue is the review article by Liu and Khong,<sup>3</sup> who revisit the topic of radiation protection in paediatric computed tomography (CT).

We are all aware that there is an increasing demand for medical imaging all around the world and the amount of medical ionising radiation received by our patients today is unprecedented. CT is the major source of medical radiation. The threat of radiation-induced cancer has posed the greatest risk to infants and young children due to the increased radiation sensitivity of growing organs and bones, as well as their longer expected life span.

In their review, Liu and Khong<sup>3</sup> remind us of the ICRP (International Commission on Radiological Protection) recommendation on justification of medical exposure. Three main websites are given where guidelines for appropriate use of imaging examinations can be found for reader's easy reference. The use of a diagnostic reference level is briefly discussed. Radiologists and radiographers, who are involved in paediatric imaging, should be the gate-keepers of radiation protection for paediatric patients and ensure that the ALARA (as low as reasonably achievable) principle is adhered to in every medical imaging examination. It is the responsibility of the radiologists and CT technologists to adjust imaging parameters, scanning coverage, and imaging protocol whenever a child is referred for a CT examination, to strive for a balance between acceptable diagnostic image quality and lowest possible radiation exposure. Radiologists, especially those who are specialised in paediatric imaging, are best placed to make regular audits of referral criteria and make recommendations to clinicians for alternative imaging modalities such as ultrasound / magnetic resonance imaging (MRI) to replace CT whenever resources are available.

Ultrasound and MRI constitute the bulk of paediatric imaging. The pictorial review by Sitt et al<sup>4</sup> is based on ultrasound examination of scrotal masses in children. The article outlines a diagnostic algorithm to classify scrotal pathology as a painful or non-painful mass and summarises the imaging features of common testicular and paratesticular mass lesions.

Three articles are related to MRI of the paediatric central nervous system. The two articles focused on MRI brain cover both basic and advanced neuroimaging in children. The article by Prabhu et al<sup>5</sup> describes a simple step-by-step approach to identify landmarks of normal myelination pattern (myelination clock) at different stages of childhood. It is important to understand the

normal sequence of myelination in order for early detection of leukodystrophies and hypomyelination conditions that may be overlooked in young infants before the myelination has been completed. The paper by Lai et al<sup>6</sup> gives a detailed review about the basic theories, techniques, and clinical applications of MR spectroscopy, diffusion tensor imaging, and MR perfusion in the diagnosis, assessment, and treatment planning of paediatric neurological conditions. The article by Singh et al<sup>7</sup> shares an institutional experience of MRI in spinal dysraphism with illustrative examples.

We hope our readers will enjoy this theme issue and find the information useful when imaging children.

## REFERENCES

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## HKJR Call for Papers – Theme Issues

The following themes are set for the future issues of HKJR. The Editorial Board would like to invite authors to submit papers (reviews, research articles, pictorial essays, or brief communications) on these topics:

**Theme** (deadline for initial submission of manuscripts)

- Musculoskeletal Imaging & Oncology (January 2017)
- Liver Imaging & Oncology (April 2017)
- Cardiac Imaging (July 2017)

Criteria for selection of manuscripts include: (1) quality, rigor and originality, (2) significance and usefulness for enhancing our understanding of the topics; (3) and clarity of writing and presentation. All manuscripts must follow the “Information for Authors” listed at: <http://www.hkjr.org/page/information-author>.

Manuscripts submitted for the Theme Issue will first undergo the same peer review process as all regular manuscripts. Due to the timeline for publishing the Theme Issue, however, HKJR will monitor the progress of manuscripts through the review process and try to shorten the overall process; likewise, authors should expect to be especially timely in returning revisions.

Authors should submit the papers via our online submission system: <http://www.hkamedtrack.org/hkjr>.