
EDITORIAL

From Diagnosis to Treatment

MK Yuen

Deputy Editor-in-Chief, *Hong Kong Journal of Radiology*

In a disease process, particularly cancer, from diagnosis to treatment, specialties and subspecialties of radiology are often involved during different stages. We are pleased to introduce the articles in this issue of *Hong Kong Journal of Radiology* that may reflect how we are doing.

In the initial detection and diagnosis of disease, different imaging modalities come into play. The depth of their involvement depends on the disease type and nature. Despite improvements in non-radiation imaging technologies such as ultrasonography and magnetic resonance imaging, computed tomography (CT) still plays a substantial role in patient care and forms a significant portion of our daily workload.

When using diagnostic imaging with radiation such as CT, it is vital to keep the radiation dose to the patient as low as reasonably achievable (ALARA principle). The optical lens is sensitive to radiation that induces early development of cataract, and is of concern in head and neck imaging. Radiation dose reduction to the lens has been long established by most centres through modification of the scanning plane in brain CT imaging.¹ The lens radiation reduction on temporal bone CT, however, has attracted less attention. This may be related to the heavier workload of brain CT than temporal bone in our daily practice and the greater demand for higher-resolution CT images to assess detailed structure of the temporal bones. In this issue, Lee et al² successfully demonstrate temporal bone CT scanning using the acanthiomeatal line instead of the conventional orbitomeatal line as the base line. The radiation dose was decreased (31.4% to 46.1% dose reduction) without jeopardising the prerequisite of high-definition images for fine structures of temporal bone.

Diagnosis of some common diseases may appear straightforward. Nonetheless, more in-depth differentiation of the subtypes of disease or pathology

that affect the prognosis and thus the management may be difficult. Hirunpat et al³ used the apparent diffusion coefficient (ADC) value to differentiate high-grade (atypical and malignant) from low-grade (benign) meningiomas. They propose use of a mean ADC value of less than $0.8 \times 10^{-3} \text{ mm}^2/\text{s}$ as a predictor of high-grade meningioma (with sensitivity of 75%, specificity of 65%, positive predictive value of 46.2%, and negative predictive value of 86.7%). Early prediction of high-grade meningioma aids preoperative surgical planning and determination of frequency of radiological surveillance in the course of management. In addition to traditional or conventional imaging, reporting of parameters measured with state-of-the-art technology is becoming increasingly routine in our daily practice. Such information supplements our conventional interpretations and is often required to answer the questions of clinicians and to facilitate the patient's management.

The use of different imaging modalities in a given disease process also varies in different centres and is influenced by the process per se, the availability of service and, more importantly, clinician's preference. Westerland et al⁴ studied the utilisation of imaging in patients with suspected acute appendicitis in two community hospitals in the United Kingdom and focused on patients with negative appendicectomy. Use of computed tomography of the abdomen and pelvis (CTAP) and transabdominal ultrasound (TAUS) was less frequent and the negative appendectomy rate was higher than those reported previously. The relative underutilisation of imaging by clinicians, apart from the issue of availability, may be due to previous experience. For example, unlike CTAP, the number of non-diagnostic TAUS was high (32.2%, 112/348), thus clinicians would not always depend on the TAUS result. It is interesting that they stratified patients into different age-groups. They proposed that for patients younger than 30 years, TAUS may be the

primary investigation before CTAP. The performance of ultrasound for diagnosis of acute appendicitis in young adult patients has not been separately studied or reported in the literature. Apart from improving the quality of ultrasound, which may in itself be limited by operator's expertise and patient's body build, non-diagnostic ultrasound results need to be managed. The setting up of a clinical decision rule for further clinical monitoring or CT rather than proceeding directly to CT may be helpful.^{5,6} The cohort in the study was confined to patients with appendectomy. It is possible there were patients who underwent imaging but had negative results and clinicians might or might not have decided to operate. These patients were not included in the study. If this group of patients was included as true-negative results, although unknown, the negative predictive value, specificity, and accuracy of both TAUS and CTAP would definitely increase.

In our daily practice, thoracentesis and pleural biopsy are common interventional procedures to diagnose and manage pleural conditions. Sitt et al⁷ studied the performance of ultrasound-guided pleural biopsy and found that combining pleural aspirate cytology and microbiological assessment of both the pleural biopsy and pleural aspirate yielded a definitive diagnosis in up to 90% of cases. They suggest that the combination can maximise the utility to help diagnose pleural effusions, in particular to obtain pathological diagnoses for suspected tuberculosis and tumours, and to provide tissue for immunohistochemical testing in confirmed malignant conditions. A slight change or modification of practice would enhance performance.

Contrary to common diseases, by definition, rare diseases are those with a very low prevalence, that is, only a few patients per 100,000 people. The exact prevalence varies and depends on countries, thus research into rare diseases is difficult. It requires a multidisciplinary and coordinated approach, cooperation across nations, and optimised resources.⁸ Despite the relative rarity of the disease, Szeto et al⁹ reviewed the management of squamous cell carcinoma of the penis in patients treated at their unit during the past 14 years. The majority of patients studied presented late with advanced stage disease, and none received neoadjuvant or adjuvant chemotherapy. The data obtained will allow future comparisons to be made in the management of this rare disease.

Treatment changes when there are advancements in the understanding of a disease. To have a sustainable

improvement in disease treatment, review of the treatment outcome is important. Law et al¹⁰ compared the treatment outcome of cetuximab (C225) with cisplatin (CDDP) during radical radiotherapy (RT) for locally advanced head and neck cancer. They concluded that the use of CDDP concurrently with RT can attain better local control and survival than C225 used concurrently with RT. For patients in whom CDDP is contraindicated or not tolerated, concurrent use of C225 with RT can achieve a better clinical outcome than RT alone.

Presentation of diseases sometimes varies and is affected by the progress of pathology or other co-existing conditions. This issue includes two case reports with unusual haemorrhage presentation. Nung et al¹¹ reported two patients prescribed warfarin with gastrointestinal stromal tumour that presented as intraperitoneal rupture. Garge et al¹² describes a patient with bleeding from multiple torn surface vessels secondary to the liver capsule being stripped off by the expanding subcapsular haematoma. The multiple bleeding points were along the surface and not within the parenchyma. They describe the appearance on digital subtraction angiography as 'watering can' and propose that it indicates a poor prognosis and should prompt a more aggressive approach to management.

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REFERENCES

1. Lai KF, Cheung YK, Tan CB, Tsui E, Yu SK. Lens exclusion in computed tomography scans of the brain — the local practice. *J Hong Kong Coll Radiol.* 2001;4:181-4.
2. Lee TF, Chu CY, Sung HT, Leung ST, Leung KW, Kan WK. Reduction in lens dose in temporal bone computed tomography by modification of scanning plane. *Hong Kong J Radiol.* 2016;19:91-5. [cross ref](#)
3. Hirunpat S, Sanghan N, Watcharakul C, Kayasut K, Ina N, Pornrujee H. Is apparent diffusion coefficient value measured on picture archiving and communication system workstation helpful in prediction of high-grade meningioma? *Hong Kong J Radiol.* 2016;19:84-90. [cross ref](#)
4. Westerland OA, Singh RK, Nagraj HC, Muthukumarasamy S, Ramasar K, Saunders MP, et al. Imaging in acute appendicitis: lessons learned from appendectomy patients at two district general hospitals in the United Kingdom over a six-year period. *Hong Kong J Radiol.* 2016;19:118-25. [cross ref](#)
5. Leeuwenburgh MM, Stockmann HB, Bouma WH, Houdijk AP, Verhagen MF, Vrouenraets B, et al. A simple clinical decision rule to rule out appendicitis in patients with nondiagnostic ultrasound results. *Acad Emerg Med.* 2014;21:488-96. [cross ref](#)
6. Poortman P, Oostvogel HJ, Bosma E, Lohle PN, Cuesta MA,

- de Lange-de Klerk ES, et al. Improving diagnosis of acute appendicitis: results of a diagnostic pathway with standard use of ultrasonography followed by selective use of CT. *J Am Coll Surg.* 2009;208:434-41. [cross ref](#)
7. Sitt JC, Lee RK, Chan AW, Hui M, Wong KT, Yu SC. Clinical application, performance, and common pitfalls of ultrasound-guided pleural biopsy: our local experience. *Hong Kong J Radiol.* 2016;19:103-10. [cross ref](#)
 8. EURORDIS. Position paper. Why research on rare diseases? October 2010. Available from: http://www.eurordis.org/sites/default/files/publications/why_rare_disease_research.pdf. Accessed 3 Jun 2016.
 9. Szeto OY, Cheng HC, Ng WM, Ngan KC. Squamous cell carcinoma of the penis: fourteen-year experience from a tertiary institution. *Hong Kong J Radiol.* 2016;19:111-7. [cross ref](#)
 10. Law KS, Wong RK, Yu E, Cheng AC. Treatment outcome of cetuximab compared with cisplatin during radical radiotherapy for locally advanced head and neck cancer. *Hong Kong J Radiol.* 2016;19:96-102. [cross ref](#)
 11. Nung RC, Wong SS, Lee RK, Chan AB, Lee YY. Two cases of gastrointestinal stromal tumour presenting uncommonly as intraperitoneal rupture in patients prescribed warfarin. *Hong Kong J Radiol.* 2016;19:132-6. [cross ref](#)
 12. Garge S, Keshava SN, Moses V, Ahmed M, Jain S, Joseph P. Hepatic subcapsular haemorrhage: watering-can appearance. *Hong Kong J Radiol.* 2016;19:141-4. [cross ref](#)