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Managing the Future of Our Profession

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The practice of medicine changes with the times, something that radiologists worldwide would rather ignore or, worse, pretend will have no effect on the practice of their profession. If we choose not to recognise these inevitable revolutions, we risk the extinction of the specialty of radiology. Twenty to thirty years ago, physicians and surgeons were generally trained doctors who would perhaps go on to specialist training in certain disciplines, but the majority would remain as physicians with an interest in, for example, cardiology, neurology, gastroenterology, etc. Today, specialty higher training is taken for granted, often followed by sub-specialisation. This article explores why we need to take the next step to maintain our role.

Our Evolving Profession

In radiology, the same evolution of specialisation applies, but has taken more time to develop. As technology advanced, modality-based specialist radiologists arose, with expertise in CT, ultrasound, intervention, nuclear medicine, etc. Gradually, more specialised radiologists developed, often a mixture of modality- and organ system-based. The next step saw body part/disease-process specialised radiologists become more common.

Radiologists are becoming increasingly sub-specialised in organ systems, for example the breast, gynaecology, chest (lungs), vascular, neurology, etc. This trend is not merely copying the practice in North America, Australasia and South Africa, it is now reflected in the organ-based modules of the UK FRCR (Fellowship of the Royal College of Radiologists) part 2 examination. This changing pattern of specialisation in radiology, culminating in relatively narrow sub-specialised radiologists, follows directly from the increasingly important role of the multi-disciplinary team meeting (MDTM) in clinical practice.

Multidisciplinary Team Meetings

One of the crucial motivators behind the growing focus on sub-specialised imagers is the central importance of MDTMs to radiology. The radiologist only has a role in an MDTM if (s)he can add value to the interpretation of the image over and above that provided by the other non-radiological members of the MDTM. It is only to be expected that the non-radiologist clinician who spends his/her life dealing exclusively with a particular organ system will become as proficient as, if not more proficient than, a general radiologist in interpreting images of that organ system.

To add value and maintain a role, the radiologist must be more competent at interpreting these images than his/her non-radiological colleagues and must equal their knowledge in understanding the significance of this interpretation in the clinical scenario pertaining to that patient. The pace of technological progress in imaging today and the vast amount of imaging expertise and clinical specialist knowledge associated with every organ system, means that it is impossible for the general radiologist to remain "one step ahead" of nonradiological clinicians in more than one or two organ systems.

Why Do We Need Sub-Specialisation?

To be at the cutting edge of imaging in a particular body part requires sub-specialisation in imaging of that organ system, with the radiologist

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having an up-to-date knowledge of the whole clinical pathway, including an understanding of:

1. Presenting symptoms and signs,
2. Interpretation of clinical investigations, in particular imaging examinations (including diagnosis and staging for cancer),
3. Treatment and management options,
4. Disease progression, and,
5. Treatment of complications.

Items (2), (4) and (5) are directly relevant to the imager, and item (3) requires an appreciation of whether biopsy, drainage, etc., is relevant. To maintain such knowledge, the imager needs to work closely with the relevant clinical team(s), read specialist journals and attend pertinent clinical meetings focussed on that organ system. Now that teleradiology and teleconferencing has become a practical reality, if no local imaging expertise exists for such subspecialisation, it can be obtained remotely via MDTM teleconferences.

Situation in the UK

In the UK, medical careers have already been “modernised”, such that all newly qualified doctors undergo two foundation years of work on the wards, rotating usually every four months to a different job and specialty. At the end of this time they specialise in a discipline of their choice. I predict that in future this choice of specialty will be organ-based, for example, they will then choose to specialise in the cardiovascular system, the central nervous system, the gastrointestinal system, etc.

In terms of education, I advocate that they follow a “two plus three” year specialisation, spending initially two years on the wards and in clinics clerking in and examining patients admitted to their particular organ-based discipline, requesting investigations and interpreting them, undertaking ward care, prescribing and follow-up clinics. They would then spend three years sub-specialising within that organ-based discipline, choosing from the following types of sub-specialisation:

- Highly invasive: corresponds to today’s conventional surgery
- Minimally invasive: corresponds to the interventional radiologist, the endoscopist or bronchoscopist, etc.
- Medical treatment: corresponds to the traditional physician who treats patients with drugs
- Imaging: corresponds to the non-interventional radiologist. If we illustrate the above with cardiology, the categories would be as follows:
 - Highly invasive: the cardiac surgeon performing open cardiac surgical procedures (a diminishing demand)
 - Minimally invasive: the invasive cardiologist performing percutaneous cardiac intervention, including angioplasty and stent placement, valvotomy, etc.
 - Medical treatment: drug treatment
 - Imaging: echocardiography, PET and nuclear medicine, CT and MR imaging of the heart.

Disadvantages

So what is the downside? Small hospitals cannot provide sufficient work in any one specialty to support numerous sub-specialty radiologists. Also, now that all imaging services are rapidly becoming entirely digital throughout England (and shortly thereafter, throughout the whole of the UK) the reporting of imaging studies will cease to be location-dependent. Thus organ-specialised imagers are likely to be responsible for reporting some imaging studies referred via teleradiology from healthcare institutions physically distant from their workbase. This is already the case for many MDTMs performed via teleconferencing.

Also, from time to time an important unexpected imaging finding incidentally affecting a different organ system risks being missed by an imager not specialised in that body part. Clearly, such a miss would have dire consequences for the individual patient, but would be rare and also be more than compensated for in the total population by the infinitely larger number of patients who will benefit substantially from a timely specialist opinion giving an accurate diagnosis of the organ pathology in question.

Radiology as an Integrated Discipline

If radiologists are to become a collection of organ-specialised imagers, I would advocate that (taking the UK system) the Royal College of Radiologists should gradually mutate into a college of imagers, uniting imagers from all the different medical specialties into one body with common standards of imaging excellence, promoting uniform best practice in imaging.

To become accredited as a specialist organ-imager, it should be necessary to pass the appropriate module of a specialist FRCR (or “FRCI”,
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where I stands for “imaging”!), set by this college of imagers. The situation in radiology has already progressed substantially in this direction, e.g., dedicated breast radiologists now have little in common with other radiologists, and radiologists who never perform mammography are unlikely to attend specialist national or international meetings on breast radiology or breast disease.

Conclusion

The evolution of specialist organ-based imagers is inevitable, driven by the need to provide specialist expert imaging opinion at MDTMs. To add value in image interpretation, over and above an opinion expressed by an organ specialised physician/ surgeon, an imager must dedicate him/herself to the specialist imaging of a single (or very limited number) of organ(s) to become highly competent and sufficiently experienced. Imaging will simply become one sub-specialty within each clinical discipline, and imagers will work closely within individual clinical teams.

The training of imagers will be pertinent only to their clinical practice, and will be aimed at highly specialised state-of-the-art imaging in both expertise and equipment. This will provide a streamlined service to patients, with an efficient “one stop shop” investigation and treatment of the clinical problem by a dedicated clinical team and could potentially reduce waiting lists. Such practice will be predicated upon initial referral to the appropriate clinical team, which is why there will, in my view, always be a role for the general practitioner and the more general emergency medicine doctor responsible for the initial triage of the patient into the most pertinent clinical discipline💎

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