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The role of radiology in anatomy teaching in UK medical schools: a national survey

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AIMS: To investigate the current use of radiology in anatomy teaching across the UK, and to determine the level of interest expressed in expanding its role in medical education.

MATERIALS AND METHODS: A 22-question electronic survey was distributed to the organisers of anatomy teaching at 35 UK medical schools. The questionnaire explored the use of radiology in their anatomy course, the different kinds of available resources, and attitudes towards integrating radiology into anatomy teaching.

RESULTS: Responses were received from 29/35 (83%) medical schools. Among the respondents, radiological anatomy featured in all but one of their curricula. Of those schools using radiology to aid anatomy teaching, 20/28 expressed a wish for more radiology in the curriculum. Timetabling constraints constituted one of the main difficulties in further implementation. In addition, 22/28 medical schools had already fostered collaborative links with local radiology departments, with 18 of these expressing a wish for further cooperation. Of the remaining six schools without current collaboration, four would like to establish connections.

CONCLUSION: Compared with previous studies, this national survey shows a definite increase in radiological anatomy in medical school curricula with a stronger presence of radiologists in anatomy teaching. Despite this, most anatomy departments still express a desire to increase the radiological component in their courses.

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Introduction

Anatomy is a cornerstone of medical education and underpins all areas of clinical practice. There have been substantial changes in the way anatomy teaching is delivered in recent years, with greater emphasis on clinical relevance. In addition, following the recent expansion of medical school

places and the need to deliver a more comprehensive curriculum,¹ medical schools are facing increasing pressures to maximise their efficiency in providing effective anatomy teaching.

The importance of incorporating radiology in anatomy teaching is not a new concept, with references in the literature as early as 1927.² With the tremendous technological advances in radiological imaging in the past couple of decades and its ever more central role within clinical practice, there has been renewed interest in its role in anatomy teaching. As clinicians of all specialties must apply their anatomical knowledge when interpreting radiological images in their daily practice, these images are ideal for

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teaching students the clinical relevance of anatomy learned in lectures or the dissection room. Imaging software programs allow reconstruction and manipulation of images to aid interactive learning, enabling students to gain a greater understanding of topographical anatomy. In addition, dynamic imaging methods can relate structure to function in the living body.

It has been well over a decade since the last national UK survey which investigated the role of radiology in anatomy teaching.³ In 2002, Mitchell and Williams discovered considerable variation across medical schools both in the content and delivery of radiological anatomy teaching. Few medical schools were in possession of a substantial number of radiographs and for many schools, images were stored and only available on student request. Only 19% of medical schools had a radiologist on the teaching faculty and only 50% of schools reported established links with a radiology department. In a more recent national survey conducted in North America, radiology formed part of the anatomy curriculum in 91% of responding institutions, with a radiologist featuring as the director or co-director in 43% of courses.⁴ These figures are echoed in a similar survey in Australia and New Zealand in which all respondents used some form of medical imaging in anatomy instruction.⁵ In contrast, therefore, radiology seems to occupy a less central place in anatomy teaching in the UK; however, no recent studies have been conducted. This study aims to redress this by investigating the current use of radiology in anatomy teaching across the UK, as well as determining the level of interest expressed by anatomists in expanding its role in medical education and the role played by the radiologist in delivering of anatomy teaching.

Materials and methods

Survey distribution and data collection

An electronic survey was distributed to the anatomy teaching leads of all 35 UK medical schools. A list of UK medical schools was identified from the Medical Schools Council website.⁶ The contact details of teaching leads for the anatomy course of each medical school were identified on departmental websites. Recipients were sent an email inviting them to participate in the survey in two possible formats. Participants could either use a link to an online survey tool (Typeform, Barcelona, Spain) or complete an attached structured electronic word document and return via email. Reminder emails were sent every fortnight. Survey administration and analysis were performed using Typeform online survey software and Microsoft Excel (Redmond, WA, USA).

Survey questions

The survey consisted of 22 questions, including multiple option questions, Likert style questions, and open white-space questions. The questions in the survey explored the following five themes: (1) use of radiology in anatomy teaching; (2) course structure and examination; (3)

availability of resources; (4) collaborative links with radiology departments; and (5) challenges in integrating radiology into anatomy teaching.

Results

Responses were received from 83% (29/35) of medical schools.

Use of radiology in anatomy teaching

Among the respondents, radiological anatomy featured in all but one of the medical schools' curricula. Of those schools already using radiology to aid anatomy teaching, 20 of the 28 expressed a wish for more radiological content in the curriculum, in contrast to three schools that did not. The one medical school that did not currently include radiology in its curriculum expressed a keen desire for its use.

Course structure and examination

The majority of medical schools teach radiological anatomy using small-group teaching and didactic lectures, with problem-based learning or computer-assisted modules being used by at least 50% (Fig 1). The full range of radiological modalities was used to varying degrees (Fig 2). Twenty out of 28 (71%) medical respondents teach with direct correlation between cadaveric material (hands-on dissection or previously prepared anatomical prosections) and radiological imaging.

All schools that use radiology in their anatomy teaching also use radiological images in their examinations. Most schools used multiple choice questions and steeplechase to assess radiological anatomy, with seven also using written short-answer questions or essays (Fig 3). In most schools, radiological images contribute <10% of anatomy examination content (Fig 4).

Availability of resources

Although lightboxes for the display of printed films are still used by 23/28 (82%), all medical schools surveyed now also use digital imaging, most choosing to display images on computers with one school using iPads instead. One school is planning on using tablet computers and another uses the additional printed material. Several schools have invested in more interactive technology for anatomy teaching, for example, seven medical schools use virtual dissection facilities, such as Anatomage tables. In addition, 17/28 (61%) provided hands-on ultrasound as an aid in anatomy teaching.

Collaborative links with radiology departments

Radiologists teach radiological anatomy at 24/28 (86%) of the surveyed schools and provide additional non-radiological gross anatomy teaching at eight schools (29%). Radiological anatomy is taught by both registrars and consultant radiologists at eight schools, registrars only at one school, and consultants only in the remaining schools.

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