PRACTICAL HEAD & NECK ULTRASOUND

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INTRODUCTION

We have the privilege of working and living during a time of unprecedented technological advances in diagnostic medicine. This now means that for any one diagnostic problem we have not only have one method of imaging but many methods available to us. Wise use of the various technologies dictates that the most informative, least harmful, most easily available and least expensive techniques should be employed first.

With the arrival of CT, MRI, ultrasound and nuclear medicine in medical imaging, a new era of diagnostic understanding of the head and neck has flowered.

In the soft tissues of the neck, many of the diagnostic problems that present to the clinician can be managed with maximal efficiency using ultrasound. Surprisingly, despite the pioneering of neck ultrasound by Bruneton and Solbiati, a large number of neck examinations are still being performed using nuclear medicine, CT and MRI. One might have thought that neck ultrasound would thrive in hospitals in which CT and, particularly, MRI are not readily available. Alas, it seems that most clinicians would prefer to let their patients wait several weeks for MRI and then not get a satisfactory answer, rather than obtain an ultrasound scan quickly from a knowledgeable professional and have an accurate answer sooner.

There are several texts on imaging of the head and neck[1,2] but these are predominantly CT and MRI orientated. Apart from chapters in Solbiati and Rizzatto's book,[3] there is very little helpful information to enable the radiologist in a busy general hospital to come to grips with ultrasound of the head and neck. This is unfortunate – quite apart from the usual well-known advantages of ultrasound in the head and neck, it is remarkably accurate and easier to apply than CT and MRI.

This book therefore aims to fill that gap. The text is intended as a practical guide and bench book. It is to be hoped that it will encourage anyone with a reasonable knowledge of ultrasound to pick up the (appropriate!) transducer and start scanning the neck effectively rather than simply 'gel spreading'. It is intended to help the reader to be able to reach a useful opinion in 90% of the problems that arise in daily practice. The remaining 10% will have to be learnt from personal experience and greater in-depth reading. By the Paredo principle, trying to cover that 10% would probably quadruple the size of this book, so do not expect this book to have the answer to everything.

Besides omitting rarities we have also avoided myths – those anectodal 'facts' that keep reappearing in textbooks and examinations but which one never sees in daily practice.

The book contains the sort of information that we wish we could have had when we started neck scanning ten years ago. Much of the information is available in the literature but is scattered. Here the most useful information is gathered together by people who actually scan; the 'litter-ature' has therefore been weeded out.

Please note that this book is intended for those who will actually scan. It depends on an interactive approach. It is not meant for the CPR (couch potato radiologist) who sits back and lets others perform the scan and then 'reports the films!'. We strongly believe that this is not the way to practice ultrasound. We are also strong believers in the opinion that (good) ultrasound is not 'operator dependent', at least no more so than MRI, CT or, for that matter, surgery or pathology. The claim that ultrasound is operator dependent is merely a feeble line of defence for CPRs who are unwilling to roll up their sleeves and learn how to do the job properly!

For thyroid nodules, we can now make a diagnosis with ultrasound that can be more reliable than fine-needle aspiration cytology (FNAC) and far more useful than scintigraphy, which surprisingly is still mentioned in the texts as

being a method of choice. It is high time that thyroid scintigraphy took its proper place – in the history books, alongside air encephalography.

With neck lymph nodes we can now examine their vascularity, not only with colour flow and power Doppler but also with 3D volumetric analysis. The detail that can be seen in lymph nodes is superior to and more clinically useful than that obtained by either CT or MRI.

The characterisation and localisation of salivary gland tumours is simple and easy without the need to inject contrast or cannulate the ducts. Even those mysterious lumps and bumps that do not seem to belong to the expected organs reveal their secrets to ultrasound.

In many cases one is able to make a confident diagnosis before FNAC or histology, but in those cases where this is still indicated ultrasound is the imaging technique of choice in guiding the needle to its best target. Palpation-guided FNA is not only barbaric but inaccurate. Those who know how difficult it is to guide a needle into a target under direct visual control will know why the blind approach is inaccurate. In these days 'blind' biopsy 'technique' must surely mean 'blind to the benefits of guided biopsy'.

Lest the reader consider this book too dogmatic, we appreciate that there are still major controversies to sort out, and different centres have varying strengths and therefore different approaches to diagnostic management .This is best exemplified by the chapter dealing with biopsy techniques which voices the different approaches that can be used in the head and neck.

Despite its multiple authorship this book has a feeling of common purpose and I would like to think, with considerable pride, that this is the result of a common origin for several of the authors. Rhodri Evans, Mike Bradley and Eric Loveday have all passed through my department in the Chinese University of Hong Kong at the Prince of Wales Hospital. It was here that they learnt the initial skills and have been able to take these back to Europe (I believe that Britain is considered, by some, to be part of Europe in a peripheral sort of way!) and to develop them further.

Most of the authors have taught at the Morriston Head and Neck Ultrasound Workshops. As the Morriston course evolved, it became clear that there is a real need for a co-ordinated approach to the head and neck. This text should fill that need. The spectrum of topics discussed should provide the necessary background for anyone starting out in head and neck ultrasound.

The Morriston course has not so far not included a section on carotid and vertebral ultrasound/Doppler; however, it was felt that this is an essential component of neck ultrasound and has therefore been added. The sonologist or sonographer who deals with the head and neck must be competent not only in grey-scale ultrasound but colour flow and pulsed Doppler as well. In the neck we have the opportunity of using every new technique that the ultrasound designers can give us!

It is gratifying to learn that the European Association of Radiology has now recognised head and neck imaging as a subspecialty in its own right, alongside such older worthies as neuroradiology and paediatric radiology.

This handbook is therefore timely and we hope that it will add a small, but useful, gust to the necessary winds of change.

Con Metreweli

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Anil and Rhodri