BOOK REVIEWS

National Council on Radiation Protection and Measurements,
N.C.R.P. Report 73
Protection in Nuclear Medicine and Ultrasound Diagnostic Procedures in Children. (1983) 81pp
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This short report addresses two particular problems. It provides information on the manner of conducting nuclear medicine studies in children in such a way as to keep the radiation dose as low as achievable consistent with maintaining a high information content. It also considers the apparently equivalent problem in diagnostic ultrasonic procedures and discusses the factors to be considered for its continued safe use in clinical practice. The intended audience is stated to be 'paediatricians, radiologists, technologists and technicians and others... who use nuclear medicine and ultrasound studies in examining children'. The value of containing in one slim volume paediatric nuclear medicine dose data is significant and will be of use to all the intended audience. In spite of regretting a paucity of paediatric radionuclide distribution data, the report succeeds in drawing together as much relevant information on organ weights, cumulated activities and absorbed doses to whole body and critical organs for selected radiopharmaceuticals. This data is given for the newborn, and for one, five, ten and fifteen year olds. Used in conjunction with a twenty-eight page appendix which tabulates S values (mean dose per cumulated activity) this report allows ready access to a large amount of the presently-available data relevant to paediatric dosimetry. My main regret is the reluctance of the authors to use SI units. The exclusion of the use of SI units, which is noted as a Council decision, must surely result in the value of the document diminishing with time more rapidly than necessary.

The chapter in which diagnostic ultrasound is discussed is less satisfactory. Although there is a brief summary of some bioeffects, together with documentation of intensity values from some older commercial equipment, there is insufficient concrete data to allow a good individual judgement

concerning the protection of the patient. One is left only with the reassurance that there are apparently little or no significant biological implications associated with diagnostic ultrasound exposure at current levels. This is, in truth the present state of knowledge, but I doubt that the inclusion of this chapter would of itself be sufficient cause to own this report. It is to be hoped that a future report (NCRP Report number 74 entitled Biological Effects of Ultrasound Mechanisms and Clinical Implications) will provide more specific guidance concerning the safety of diagnostic ultrasound.

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Technology of Nuclear Magnetic Resonance

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Previous annual symposia by the SNM have concerned nuclear medicine procedures only. That this the 14th annual symposium should be solely dedicated to a new imaging modality, Nuclear Magnetic Resonance, reflects the real interest shown by practitioners of nuclear medicine in this technique.

This collection of papers serves as both an introduction to the subject generally and as an opportunity to assess some recent developments in the instrumentation in this field. The first four review articles give an overview of the technique, and for those not familiar with the techniques are excellent. As well as clear descriptions of the theory of NMR, there are interesting practical examples. The effect of imaging whilst the door of the screened room is open is shown to highlight the control of environmental factors necessary for good NMR.

The next four papers contain the kernal of the subject which is the relationship between image appearance and the imaging parameters such as pulse sequence, T1 and T2 extraction etc. The physics of this section is complex and this part of the proceedings will probablty only be of value to medical physicists. This area is however of vital importance in these early days of NMR imaging. Standardised image parameters should be the goal of different manufacturers so that the medical utility of NMR can be most optimally determined. It is important to understand the relationship between image appearance and the imaging parameters. This is clearly revealed in this section with good use of examples.