

Note on Paediatric Radiology

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Editorial

Paediatric radiology is a subspecialty of radiology involving the imaging of foetuses, infants, children adolescents and young adults. Many paediatric radiologists practice at children's hospitals.

Although some diseases seen in paediatrics are the same as that in adults, there are many conditions which are seen only in infants. The specialty has to take in account the dynamics of a growing body, from pre-term infants to large adolescents, where the organs follow growth patterns and phases. These require specialised imaging and treatment which is carried out in a Children's hospital, which has all the facilities necessary to treat children and their specific pathologies.

This is one of the most essential elements to paediatric radiology. For imaging departments which specialise in paediatric radiology, this is very easy as rooms can be tailored to suit a child's needs. For example, bright wall designs, visual stimulation and toys. These can be permanent fixtures as the department wouldn't need to cater to any other age range. For departments which only see children occasionally, creating a 'child friendly' environment is more difficult. It is usually achieved by creating one room a 'child friendly room' where murals /stencils can be painted on the wall. Modern children's hospitals are now designed with much glass to allow as much natural light in as possible.

Paediatric radiology comes with many challenges. Unlike adults, children cannot always understand comprehend a change of environment. Therefore, staffs are usually required to wear colourful uniforms, usually 'scrubs', as opposed to a normal hospital uniform. It is also important to recognise that when a child is unwell, they follow their instincts, which is usually to cry and stay close to their parents. This presents a huge challenge for the radiographer, who must try to gain the child's trust and gain their co-operation. Once co-operation has been achieved there is another big challenge of keeping the child still for their imaging test. This can be very difficult for children in a lot of pain. Coercion and support from parents is usually enough to achieve this, however, in some extreme cases (such as MRI and CT) it may be necessary to sedate the child.

Radiation safety issues

There are risks from ionizing radiation that are comprehensively

studied in the survivors of the atomic bomb in Hiroshima in 1945. Longitudinal studies led by the National Academy of Sciences in the United States have shown increased cancer rates in this population that are dose dependent. From these data, modelling research suggests that even at the lower doses used in medical imaging, there may be an added risk of cancer. [3] Last year, two medical physicists suggested that the increasing use of CAT Scans in the United States may increase cancer incidence in the future

The body size differences are paralleled by maturation changes. The smaller body of an infant or neonate is substantially different physiologically from that of an adult. Congenital defects, genetic variance, and developmental issues are of greater concern to paediatricians than they often are to adult physicians. A common adage is that children are not simply "little adults". The clinician must take into account the immature physiology of the infant or child when considering symptoms, prescribing medications, and diagnosing illnesses. Paediatric physiology directly impacts the pharmacokinetic properties of drugs that enter the body. The absorption, distribution, metabolism, and elimination of medications differ between developing children and grown adults. Despite completed studies and reviews, continual research is needed to better understand how these factors should affect the decisions of healthcare providers when prescribing and administering medications to the paediatric population

Paediatric age is the degree of maturation of a child's bones. As a person grows from fetal life through childhood, puberty, and finishes growth as a young adult, the bones of the skeleton change in size and shape. These changes can be seen by X-ray techniques. The "bone age" of a child is the average age at which children reach various stages of bone maturation. A child's current height and bone age can be used to predict adult height. For most people, their bone age is the same as their biological age but for some individuals, their bone age is a couple of years older or younger. Those with advanced bone ages typically hit a growth spurt early on but stop growing sooner, while those with delayed bone ages hit their growth spurt later than normal. Children who are below average height do not necessarily have a delayed bone age in fact their bone age could actually be advanced which if left untreated, will stunt their growth.

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