Cardiovascular CT radiation dose reduction by modifying primary factors

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Objectives:

1. To describe risks related to the use of CT
2. To recognize the metrics used to describe CT dose
3. To discuss CT dose reduction technologies

The growing use of imaging procedures, particularly multidetector CT, has raised concerns about exposure to low-dose ionizing radiation in the general population and particularly in children. CT is an important source of exposure to ionizing radiation and can result in high cumulative effective doses. This has important implications for the health of the general population. Given the rapid evolution in multidetector CT technology and its complexity, dose reduction efforts require knowledge of interactions between CT scanning parameters and their impact on radiation dose and image quality in CT examinations. Advances in technology continually change the design and capabilities of CT scanners and the radiation output. Because of the dramatic rise in CT use, it is imperative that scanning techniques be optimized. Optimization in the context of the performance of CT requires that the scan be of diagnostic quality for the clinical task at hand, yet be performed at a radiation dose that addresses radiation risk to the patient and to the public. This presentation describes the primary factors affecting dose in CT and effects of modifying these primary scanning factors such as tube current, tube potential, pitch and dose reduction to sensitive tissues (e.g., breast) in CT.

Hydrotherapy in pediatrics

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Hypertension in the young population is underestimated and undertreated: not because of negligence, but rather due to the difficulty in its diagnosis and follow-up. Each child has a blood pressure of his own in accordance to his age, sex, height, weight and his ethnicity and genetics. Many pediatricians do not profile the parents’ health condition. The proper way for blood pressure measurements is also not stressed upon in exams and most do not look for it unless they spot a culprit. Primary hypertension is as real for children as it is for adults to the point of the need for publication of guidelines especially for the younger age groups. Modern day life style along with obesity and its growing prevalence is becoming problematic. “White coat” hypertension is also shared by the young population and has led to the adoption of 24 hour ambulatory blood pressure measurement techniques that may be cumbersome and annoying for the active and relentless child. Not every medication prescribed for an adult can be prescribed for a child. And on top of all of that, most people seek their pediatrician only in time of “known” sickness eliminating the advantage of follow-up on any new developments; and when informed of their child’s condition, they take it lightly because “kids just don’t have primary hypertension” unaware of the implications later in life, raising the problem of compliance. General awareness is not only necessary for the general population as a whole, but also for their healthcare provider.

Notes: