
Students' Corner

Letter to the Editor

MDCT, an emerging method of investigation for coronary artery disease

Madam, coronary angiography is an age old method to detect coronary artery disease (CAD).¹ However, its usefulness as a diagnostic tool is limited due to single plane images, narrow angle of angiography projection, side effects of contrast, morbidity and mortality rates of 1.5% and 0.15% respectively, and due to invasive nature of the procedure.¹

Non-invasive methods including magnetic resonance imaging (MRI) and contrast-enhanced beam tomography (EBT) exhibit results, which are similar to coronary angiogram yet their reliability is debated.² MRI is not the tool of choice in every patient especially those with tachycardia or arrhythmia as artefacts usually occur. It can only diagnose a narrow range of diseases due to poor image quality. Similarly regular use of EBT is hindered due to unavailability and restricted image quality.

However, due to the innovation of Multi-detector computed tomography (MDCT) investigation of coronary artery disease has become more refined. With the introduction of 16-detector row MDCT, which has enhanced temporal and spatial resolution, we can now obtain high quality cardiac images. While its temporal resolution is still a little less than that of coronary angiography (40msec), its spatial resolution is better than both MRI and EBT³ and almost parallel to that of coronary angiography. The radiation dose from MDCT is the same as that of coronary angiogram according to the data collected after a single shot of contrast injection.⁴ Spatial resolution is isotropic thus the images can be observed by multiplaner and 3D reconstruction techniques, which include surface shaded display, volume rendering and maximum intensity projection. The machine acquires data from different

phases of cardiac cycle efficiently without any pulsation motion artefacts.

The limited accessibility and the expense of MDCT are significant problems of this procedure however its brief investigation period (total scanning time can be as short as 30sec); comparative non-invasiveness of the procedure, easy preparation and minimal aftercare gives MDCT the edge over conventional coronary angiography. It seems imminent with its rising availability and enhancements in technology, especially data acquirement and post processing, coronary angiogram and cardiac investigations using MDCT could be more convenient and would become the main investigation tool for diagnosing coronary artery anomalies and diseases.

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References

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