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Coronary CT angiography: A practical approach on how to get it done

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Coronary computed tomography angiography (CTA) is a non-invasive diagnostic test with high diagnostic accuracy in detecting coronary artery disease (CAD). Due to its very high negative predictive value, it is especially suitable for ruling out CAD in patients with low to intermediate pretest probability. For stable chest pain patients in this pretest probability range, the current European guidelines recommend the use of CTA. Additionally, in patients with unstable chest pain and a low CAD probability, CTA can be considered to detect relevant differential diagnoses.

Different acquisition techniques are applied in clinical practice. Initially, retrospective ECG-gated CTA was routinely used. While this approach is very robust, especially for high or irregular heartrates, radiation exposure is relatively high. Prospective axial scanning reduces radiation exposure, since data acquisition is only performed in predefined ranges within the RR interval. Further approaches to reduce radiation exposure are the adjustment of scanning parameters, ECG-gated tube current modulation (adjusted to the heart rate and variability), automatic tube potential selection and, recently, the introduction of iterative reconstructions.

This presentation focuses more on practical approaches of coronary CT angiography and will show different real cases from clinical routine. Especially important for cardiologist, this will also include non- cardiac differential diagnoses of chest pain, as well as challenges in clinical routine and typical pitfalls.

Using CT instead of invasive coronary angiography (ICA) might be clinically advantageous in women presenting with atypical chest pain.

This is the gender sub-analysis of a randomized study in which 329 patients with a clinical indication for ICA and suspected CAD were randomized to a diagnostic strategy based on either initial CT or direct ICA. Main outcomes were minor procedural complications, length of stay and radiation dose.

Women have a significantly greater reduction in minor procedural complications than men when CT as the initial strategy is used instead of ICA while the reduction in length of stay by CT was similar in women and men and radiation doses were not different between groups.

Biography

Dr. Sarah Feger, She is a radiologist at the Department of Radiology at the "Krankenhaus der Barmherzigen Brüder Trier" (academic training hospital of the Johannes- Gutenberg University Mainz). She performed my medical studies and MD thesis at the Charité University Hospital in Berlin. Since 2011, she has been working in a non-invasive cardiovascular imaging group at the Charité University Hospital Berlin.

Her research interest is on coronary CT angiography and myocardial CT perfusion. In particular, she focus on patient acceptance of non-invasive cardiovascular imaging tests, iterative reconstructions in cardiac CT, pretest probability prediction for coronary artery disease, long- term effects of coronary CT angiography and gender- specific aspects of coronary CT. she has given several presentations at international radiological conferences (ECR and RSNA) and published my research findings in international high- ranking journals (e.g. European Radiology).

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