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- 315 **Estimation of myocardial fibrosis in humans with dual energy CT**
Vidhya Kumar, Thura T. Harfi, Xin He, Beth McCarthy, Andrea Cardona, Orlando P. Simonetti, Subha V. Raman
- Myocardial fibrosis is present in a wide range of cardiac disorders. Its noninvasive detection presently relies on cardiac magnetic resonance (CMR), which may not be feasible in many patients. This work, building on prior work in phantoms and a small animal model, evaluated a non-contrast DECT technique for evaluation of myocardial fibrosis in a prospectively-enrolled cohort of patients with varying severity of diffuse and localized fibrosis. Good agreement was demonstrated between DECT-based estimates and CMR markers of fibrosis and extracellular expansion, supporting potential utility and further studies of this technique in patients with myocardial disease.
- 319 **Age- and gender-adjusted percentiles for number of calcified plaques in coronary artery calcium scanning**
Frances Wang, Alan Rozanski, Damini Dey, Yoav Arnsion, Heidi Gransar, John Friedman, Sean W. Hayes, Louise E.J. Thomson, Balaji Tamarappoo, Leslee J. Shaw, James K. Min, John A. Rumberger, Matthew J. Budoff, Michael D. Miedema, Michael J. Blaha, Daniel S. Berman
- Recent findings have suggested that the number of calcified plaques (numCP), an indicator of plaque diffuseness, can add to global CAC in assessing cardiovascular risk. In this paper, a nomogram was created to convert raw numCP into age- and sex-adjusted percentiles using a large, multicenter patient cohort. Just as in CAC scores, females demonstrated a 10-year delayed yet similar pattern of calcified plaque development compared to males. As CAC percentiles are currently used clinically, numCP percentiles can be useful for putting into perspective the risk of CAD in patients compared to peers and assessing aggressiveness of CAD in sequential studies.
- 325 **Effect of image reconstruction algorithms on volumetric and radiomic parameters of coronary plaques**
Márton Kolossváry, Bálint Szilveszter, Júlia Karády, Zsófia Dóra Drobni, Béla Merkely, Pál Maurovich-Horvat
- Many findings support the additive value of volumetric plaque analysis in patients clinical evaluation. Furthermore, radiomics is emerging as a new tool to potentially further increase the diagnostic capabilities of coronary CT angiography. With initiatives to decrease radiation exposure, new image reconstruction algorithms have been developed. However, it is unknown whether image reconstruction has any effect on quantitative coronary CT angiography parameters. Our results show that both volumetric and radiomic parameters have excellent reproducibility with regards to different image reconstructions. However, all radiomic variables were affected by preprocessing steps before the calculation of the parameters showing the need for standardization.

331 Artificial intelligence machine learning-based coronary CT fractional flow reserve (CT-FFR_{ML}): Impact of iterative and filtered back projection reconstruction techniques

Domenico Mastrodicasa, Moritz H. Albrecht, U. Joseph Schoepf, Akos Varga-Szemes, Brian E. Jacobs, Sebastian Gassenmaier, Domenico De Santis, Marwen H. Eid, Marly van Assen, Chris Tesche, Cesare Mantini, Carlo N. De Cecco

The present study investigated the influence of CT reconstruction algorithm on machine-learning-based coronary CT-derived fractional flow reserve (CT-FFR_{ML}) computation. Data of 40 patients having undergone CCTA were included. CT-FFR_{ML} was computed twice for each patient based on both traditional filtered back projection and iterative reconstruction data sets. CT-FFR_{ML} values were significantly different on a per-vessel and per-segment analysis; however, correlation was high for the left main, left anterior descending, and right coronary arteries, as well as for all proximal and middle segments. Diagnostic accuracy for predicting lesion-specific ischemia was comparable. CT-FFR_{ML} processing time was significantly shorter using iterative reconstruction.

336 Left atrial appendage closure guided by 3D computed tomography printing technology: A case control study

Michele Conti, Stefania Marconi, Giuseppe Muscogiuri, Marco Guglielmo, Andrea Baggiano, Gianpiero Italiano, Maria Elisabetta Mancini, Ferdinando Auricchio, Daniele Andreini, Mark G. Rabbat, Andrea Igoen Guaricci, Gaetano Fassini, Alessio Gasperetti, Fabrizio Costa, Claudio Tondo, Anna Maltagliati, Mauro Pepi, Gianluca Pontone

We sought to evaluate the additional value of left atrial appendage (LAA) 3D printing derived from computed tomography (CT) datasets in determining the correct prosthesis size and the occurrence of LAA leak. A patient-specific 3D printed model of LAA was manufactured using CT pre-operative images. Compared to the 3D printed model, 55% of the patients were underestimated compared to standard measurement according to the clinical practice. The prevalence of LAA leak was significantly higher in patients with underestimation of prosthesis implanted as compared to the other patients

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340 Multimodality imaging of left atrium in patients with atrial fibrillation

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353 Coronary artery calcification and ethnicity

Kashif Shaikh, Rine Nakanishi, Nicolas Kim, Matthew J. Budoff

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