Cardiac Imaging - What Do I Really Need to Know?

**Referent(en):** Sinitsyn V

**Kurzfassung:** The pivotal role of cardiovascular (CV) imaging to the care of patients with heart disease is evident. From technical point of view CV imaging is developing very rapidly. This progress creates new demands on our profession for competence and training. Radiologists should be ready to meet these demands in order to keep cardiac imaging in their hands. Deep knowledge of CV physiology, cardiac diseases and latest advances in CV imaging technologies is a must for any radiologist performing cardiac imaging. In this aspect role of national and international (ESR and ESCR) professional organizations of radiologists becomes more and more important.

It is obvious that the need for CV imaging will continue to grow over the coming years due to progress of technology, changes in incidence and scope of CV diseases, aging of population and other reasons. We are witnessing important trends in modern CV imaging, including the move toward multimodality imaging, development of international guidelines on appropriate use and technical standards on different imaging modalities.

There were some statements about overuse of CV imaging. In reality more serious problems are underuse and misuse of cardiac radiology. This is why creation and promotion of appropriate use guidelines for CV imaging gains more and more importance to clinical care. More and more clinical trials about different CV imaging modalities are directed to show their additional diagnostic value and cost-effectiveness of healthcare. One of the most spectacular examples is use of coronary CT in patients with acute chest pain admitted to emergency departments. Another good example is increasing use of cardiac MRI for assessment of myocardial perfusion and viability, where this diagnostic modality favorably competes with nuclear myocardial perfusion scans.

An updated knowledge about clinical and economical effectiveness of CV imaging is needed if we are to further improve care of patients with diseases of heart and vessels. Radiologists in co-operation with cardiologists and cardiac surgeons should re-design the diagnostic pathways in which imaging modalities are integrated in a cost-effective strategy in the interest of patient health and economy of healthcare.
### Kurzfassung: Lung cancer is among the most frequent cancers worldwide with a mean 5-year survival clearly below 20% and smoking being the leading risk factor. In the past, chest radiography and sputum have been investigated as screening tools, but negative results were obtained from randomized trials. In the following, randomized controlled trials were initiated with the "National Lung Screening Trial" in the U.S. being the first to prove that CT screening is capable to reduce lung cancer mortality in heavy smokers by 20%. Since then, different medical societies in the US recommend annual CT screens for high risk individuals, and in 2015 the US officially introduced a lung cancer screening program with the costs covered. At the same time the discussion in Europe is highly controversial. It is obvious, that lung cancer screening can only be successful if experts from different disciplines collaborate in a comprehensive program with smoking cessation counselling and the complex processes clearly defined, certified and quality assured. This will be key to reduce false positive screen results, complications during further diagnostic work-up and radiation exposure. Also measures to increase pretest probability, e.g. by considering additional risk factors, have to be implemented in risk models in order determine the adequate intervals of CT screening as well as the relevance of the overdiagnosis bias. On top of this the scope of screening should be extended beyond the detection of nodules to a comprehensive risk assessment of smokers, including among others emphysema, airway disease, vascular disease. Cost-effectiveness has to be considered on a national level. Independent, central registration of screening data including image database and biobank, should help to assess and confirm the quality and positive effects of lung cancer screening.

### Lernziele: To appreciate the evidence in lung cancer screening To learn about the recommendations for setting-up a high quality lung cancer screening program

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### Kurzfassung: Differentiation of various interstitial lung diseases with CT is made from the point of both the pattern recognition and the location of abnormalities in lobules. Patterns of abnormalities include linear and reticular opacities, nodules, parenchymal opacification, cysts, and decreased lung attenuation. From the point of the locations in secondary lobules, abnormalities on CT were categorized centrilobular, perilobular, panlobular, and random distributions. In this lecture, the clues for the differentiation of various interstitial lung diseases will be mentioned from above two points views. Then, precise radiologic-pathologic correlation of various interstitial abnormalities will be shown in order to let you understand characteristic CT findings of various interstitial lung diseases.