Assessing Myocardial Metabolism with Hybrid PET Imaging: Instrumentation, Concepts, and Workflows.

Abstract:
Hybrid imaging devices including PET/CT and SPECT/CT have seen a great success since these scanners found their way into clinical routine - although this success is mainly based on the use in oncological imaging. But also the advent of PET/MRI holds great promise. The combined assessment of molecular imaging and morphology making use of the variety of PET tracers and the high spatial resolution from CT or MRI has the potential of an increased diagnostic accuracy all imaging but especially in cardiovascular questions. We put special emphasis on PET/MR although the experience is still limited. However, as the use of MR imaging in the assessment of myocardial viability as a prime example where assessing myocardial metabolism - even if done so indirectly - is so widespread in clinical reality, this appears to be justified. Thus, in this review, we aim to outline technical characteristics of hybrid imaging systems and highlight their use in cardiovascular diseases and their applications.