Effective radiotherapeutic treatment intensification in patients with pancreatic cancer: higher doses alone, higher RBE or both?

Abstract:
Pancreatic cancer, especially in case of locally advanced stage has a poor prognosis. Radiotherapy in general can lead to tumor volume reduction, but further improvements, such as ion beam therapy have to be promoted in order to enable dose escalation, which in turn results in better local control rates and downsizing of the tumor itself. Ion beam therapy with its highly promising physical properties is also accompanied by distinct inter- and intrafractional challenges in case of robustness. First clinical results are promising, but further research in motion mitigation and biological treatment planning is necessary, in order to determine the best clinical rationales and conditions of ion beam therapy of pancreatic cancer. This review summarizes the current knowledge and studies on ion beam therapy of pancreatic cancer.