

Application of quantitative imaging in oncologic management



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Medical imaging, such as computed tomography (CT), magnetic resonance imaging (MRI) and positron emission tomography (PET), plays a vital role for the decision-making in oncologic management. In clinical practice, imaging-derived tumor metrics are routinely applied in oncologic management as an imaging biomarker. For example, the Response Evaluation Criteria in Solid Tumors (RECIST) are commonly used for tumor treatment response evaluation based on the dynamic changes in tumor size. However, the current cross-sectional images are interpreted qualitatively for lesion characterization, treatment response evaluation and prognostic prediction by highly trained radiologists, which has increasingly apparent limitations. Therefore, there is a demanding shift toward more quantitative imaging interpretation.

Quantitative imaging, such as diffusion-weighted imaging (DWI), dynamic contrast-enhancement (DCE) and radiomics, refers to objective and systematic measurement derived from digital images, which is different from traditional subjective imaging interpretation. Many researches have demonstrated important usefulness for quantitative imaging in oncology, which outperforms the traditional imaging interpretation approach.

In this Special Issue on Quantitative Imaging in Oncologic Management, we organized five articles on the applications of DWI, DCE and radiomics in oncology, involving gastric cancer, esophageal cancer, lung cancer, breast cancer and spinal metastatic tumor. These studies included quantitative imaging for prediction of treatment response, characterization of tumor, differential diagnosis, etc. We hope these studies could provide the oncologists with quantitative imaging approaches in adding the oncologic decision-making.

Footnote

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