

Answering Reviewers

Name of Journal: *Artificial Intelligence in Cancer*

Manuscript NO: 64226

Manuscript Type: EDITORIAL

Comments from Reviewer 1:

This editorial describes how AI recognizes cancer and the potential application of AI-oriented cancer therapeutics. However, the editorial did not carry out a comprehensive review on the application of artificial intelligence technology in cancer treatment, only mentioned several common algorithms, and failed to track the technological frontier.

Answers to Reviewer 1:

Thank you very much for your constructive comments and suggestions. A new section for “Application of AI technology in cancer treatment” has been created as follows: Enhanced clinical workflow with AI interventions has been suggested in cancer treatment, which includes AI-guided detection and characterization, AI-guided treatment planning and monitoring, and AI-oriented optimization of the outcome^[23]. AI tools can be used in detection of abnormalities, characterization of suspected lesion, and determination of prognosis or response to the treatment^[23]. AI technology provides robust tumor descriptors in segmentation, diagnosis, staging and imaging genomics^[23]. Radiomic feature extraction from CT images of lung cancer patients was successful to show association with gene expression and prognostic performance^[24]. CT-based radiomic features may predict distant metastasis for lung adenocarcinoma patients^[25]. The approach in evaluation and validation of novel biomarkers incorporates modified criteria in image data into Response Evaluation Criteria in Solid Tumours (RECIST) in cancer therapy^[26]. The results of clinical study in metastatic non-small- cell lung cancer demonstrated that the treatment of pembrolizumab in combination with chemotherapy showed longer overall survival and progression-free survival than chemotherapy alone in the patients without EGFR or ALK mutations^[27]. The AI application in medical fields such as early detection, diagnosis, and treatment of diseases is expanding^[28]. Clinical data is processed with natural language processing and machine learning of AI, which would be important components in clinical decision making on treatment strategy^[28, 29] (Figure 1, Table 1).

Comments from Reviewer 2:

The paper is well written and logically organized and as editorial can be appreciated in order to reinforce the importance of artificial intelligence to detect cancer. Several tools are now usable but the flow has to be increased. Some important references can be considered in order to highlight the impact of digital/AI in cancer detection. Would recommend to add the following references: Impact of image analysis and artificial intelligence in thyroid pathology, with particular reference to cytological aspects. Girolami I et al. *Cytopathology*. 2020 Sep;31(5):432-444. doi: 10.1111/cyt.12828. PMID: 32248583 Digital reporting of whole-slide images is safe and suitable for assessing organ quality in preimplantation renal biopsies. Eccher A et al. *Hum Pathol*. 2016 Jan;47(1):115-20. doi: 10.1016/j.humpath.2015.09.012. iPathology cockpit diagnostic station: validation according to College of American Pathologists Pathology and Laboratory Quality Center recommendation at the Hospital Trust and University of Verona. Brunelli M et al. *Diagn Pathol*. 2014;9 Suppl 1(Suppl 1):S12. doi: 10.1186/1746-1596-9-S1-S12.

Answers to Reviewer 2:

Thank you very much for your favorable comments. The suggested papers have been added as follows: Digital images of pathological data in cancer have been utilized in cancer diagnosis^[5]. Digital pathology using whole-slide images may contribute into the “remote” assessment^[6]. Automated image analysis and AI applications are increasing in the field of thyroid pathology^[7].

[References]

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