**Name of Journal:** *Artificial Intelligence in Cancer*

**Manuscript NO:** 67741

**Manuscript Type:** LETTER TO THE EDITOR

**How is artificial intelligence applied in solid tumor imaging?**

Yang JS *et al*. AI in tumor imaging

Jian-She Yang, Qiang Wang

**Jian-She Yang,** Shanghai Tenth People's Hospital, Tongji University, Shanghai 200072, China

**Jian-She Yang, Qiang Wang,** Basic Medicine College, Gansu Medical College, Pingliang 744000, Gansu Province, China

**Author contributions:** Yang JS designed the research; Yang JS and Wang Q performed the research; Yang JS and Wang Q analyzed the data; Yang JS wrote and revised the letter.

**Corresponding author: Jian-She Yang, MSc, PhD, Academic Research, Professor,** Shanghai Tenth People's Hospital, Tongji University, No. 301 Yanchang Road (M), Shanghai 200072, China. yangjs@impcas.ac.cn

**Received:** May 1, 2021

**Revised:** June 21, 2021

**Accepted:** July 22, 2021

**Published online:**

**Abstract**

How is artificial intelligence (AI) applied in solid tumor imaging? What is the essential value of AI for tumor precision diagnosis and can it wholly replace the human beings? Some opinions in this letter should be considered.

**Key Words:** Artificial intelligence; Tumor; Imaging; Diagnosis

Yang JS, Wang Q. What and how does the artificial intelligence apply in solid tumor imaging? *Artif Intell Cancer* 2021; In press

**Core Tip:** Artificial intelligence has been widely applied in tumor diagnosis due to its precise recognition and big-data handling properties, which can relieve the clinicians from the diagnostic workloads. However, this model, to some extent, is rigid, and cannot completely replace the human beings eventually. How to promote and optimize it with real intelligence has a long way to go.

**TO THE EDITOR**

We have read the review article by Shao *et al*[1], who described that artificial intelligence (AI) has greatly relieved clinical workloads and changed the current medical workflows, and summarized its application outlines and priorities compared with traditional tumor diagnostic methods through reviewing related advances in this area. This aim is proper, but the authors have not done it well.

This topic is of great interest, and needs to be further investigated for a long period of time in the future. However, the authors have not outlined and described it in a rational way. The obvious shortcomings of this review are described as follows:

Given that the authors aimed to discuss the application of AI in solid tumor imaging, they should have depicted all types of solid tumors as systematically as possible, in that the solid tumors present diverse characteristics in terms of their physical and chemical nature, which are the bases that AI works on. However, the authors have failed to provide readers with enough systematical information, and with a holistic vision of AI working on solid tumors.

A review article should not only describe the phenomena alone, but it should also discuss the potential mechanism. The common mechanisms of AI seem to be well-known, but there is a lack of description for interactive episode in this review.

Concise and precise graphs will inevitably improve the quality of the article, but the authors have not made use of these.

AI, sometimes, can resolve the difficulties that other advanced technologies or human beings could not do. Thus, in this review, the authors should have made great efforts to describe how AI processes images. Whether AI can recognize the diversity of the graphic grayscale, special molecules, or even some metal ions, and how it works? How does AI distinguish the tumor from the surrounding tissues? All of these principles and advancements should be clarified as detailed as possible.

Additionally, although the authors wanted to describe and summarize the advances and advantages of AI, they failed to provide more information systematically, but only listed amounts of dispersive works, without any graphs highlighting the AI characteristics.

**REFERENCES**

1 **Shao Y,** Zhang YX, Chen HH, Lu SS, Zhang SC, Zhang JX. Advances in the application of artificial intelligence in solid tumor imaging. *Artif Intell Cancer* 2021; **2**: 12-24 [DOI: 10.35713/aic.v2.i2.12]

**Footnotes**

**Conflict-of-interest statement:** Theauthors declare no conflicts of interest for this manuscript.

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: http://creativecommons.org/Licenses/by-nc/4.0/

**Manuscript source:** Invited manuscript

**Peer-review started:** May 1, 2021

**First decision:** June 18, 2021

**Article in press:**

**Specialty type:** Engineering, biomedical

**Country/Territory of origin:** China

**Peer-review report’s scientific quality classification**

Grade A (Excellent): 0

Grade B (Very good): 0

Grade C (Good): C

Grade D (Fair): D

Grade E (Poor): E, E

**P-Reviewer:** Hanada E, Moret-Bonillo V, Vishnoi S **S-Editor:** Liu M **L-Editor:** Wang TQ **P-Editor:**