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LETTER TO THE EDITOR

Artificial intelligence for disease diagnostics still has a long way to go

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Abstract

Artificial intelligence (AI) can sometimes resolve difficulties that other advanced technologies and humans cannot. In medical diagnostics, AI has the advantage of processing figure recognition, especially for images with similar characteristics that are difficult to distinguish with the naked eye. However, the mechanisms of this advanced technique should be well-addressed to elucidate clinical issues. In this letter, regarding an original study presented by Takayama *et al*, we suggest that the authors should effectively illustrate the mechanism and detailed procedure that artificial intelligence techniques processing the acquired images, including the recognition of non-obvious difference between the normal parts and pathological ones, which were impossible to be distinguished by naked eyes, such as the basic constitutional elements of pixels and grayscale, special molecules or even some metal ions which involved into the diseases occurrence.

Key Words: Artificial intelligence; Figure recognition; Diagnosis; AI interactive mechanisms

Core Tip: We strengthened the importance of mechanism elucidation of the advanced artificial intelligence in processing figures recognition, especially for those images with very similar characteristics that are difficult to be distinguished by the naked eye, and expressed a caution on decision making by using artificial intelligence technique for medical use, in that the unidentified potential would result in a bias.

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TO THE EDITOR

Recently, Takayama *et al*[1] reported that a branch of artificial intelligence (AI), namely, deep learning (DL), combined with reduced-field-of-view (reduced-FOV) diffusion-weighted imaging, which was identified as field-of-view optimized and constrained undistorted single-shot, has greatly improved image quality without prolonging the scan time for pancreatic cystic lesion diagnostics.

This is an very interested work related the current hot-topic, while, due to the technical shortages, further investigation need to be done during the near future. In terms of these issues, the authors haven't outlined and addressed it in this work rationally. Here we presented some of shortcomings.

In this work, authors have applied the artificial intelligence to distinguish the images for identified diagnosis of pancreatic disease from other related or concurrent diseases, they should also analyze all types of pancreatic images by this technique as systematically as possible. Given the variety of diseases, even the physiological status of pancreatic disease can present diverse physical and chemical characteristics, which are the bases on which AI operates. However, by simply applying the commercial AIR™ Recon DL algorithm (GE Healthcare), the authors have not provided readers the essential and enough information which mentioned above, even in the form of a supplementary material. A complete work should describe the phenomenon with its potential mechanism. Though the AI basic procedures and regulations have been well established by scientists, this interactive episode was absent in this study.

AI can sometimes resolve difficulties that other advanced technologies and humans cannot[2,3]. The authors should effectively illustrate the mechanism and detailed procedure that artificial intelligence techniques processing the acquired images, including the recognition of non-obvious difference between the normal parts and pathological ones of pancreatic, which were not sensitive to naked eyes, such as the pixels and grayscale, special molecules or even some metal ions which involved into the diseases occurrence. All of these presentation will facilitate the understanding of AI processing and recognizing similar or confused images. These are the fundamental principles for artificial intelligence applying in medical use.

FOOTNOTES

Author contributions: Yang JS, Wang Q, and Lv ZW designed the research, analyzed the data and wrote the paper.

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