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Imaging Methods Improve to Better Detect Ovarian Lesions

Ovarian cancer has the fifth highest cancer death rate among women, causing more deaths than any other cancer of the female reproductive system(American Cancer Society 2022). Unfortunately, only an approximated 20% of ovarian cancer cases are discovered at an early stage. This may be due to the lack of real screening tests for them, and few symptoms to prompt them.Consequently, ovarian cancer can go undetected for years.

In more than 80%of women who have their lesions removed and tested, there is no sign of cancer. Thus, proving how difficult it is to accurately diagnose ovarian lesions.

To provide a solution to this issue, researchers from Washington University in St. Louis developed a new machine learning fusion model. The model will use existing ultrasound features of ovarian lesions to help it learn to recognise whether a lesion is benign or cancerous from reconstructed images taken with photoacoustic tomography.

Ultrasonography is the primary imaging modality for identifying ovarian masses, but as they are primarily based on the size and shape of the ovarian lesions, they do not provide an accurate diagnosis for earlier ovarian cancer.

Quing Zhu, professor of radiology at the School of Medicine said, “Photoacoustic imaging adds more functional information about vascular contrast from hemoglobin concentration and blood oxygen saturation”.

Adding the total hemoglobin concentration and blood oxygenation saturation from photoacoustic imaging - two of which are biomarkers for cancerous ovarian tissue - improves the overall diagnosis of ultrasound.

As doctoral student, Yun Zou, summarised, “ultrasound-enhanced photoacoustic imaging fusion model reconstructed the target’s total hemoglobin and blood oxygen saturation maps more accurately than other methods and provided an improved diagnosis of ovarian cancers from benign lesions”.

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