
AUDT：经皮注射超声造影在评估乳腺癌前哨淋巴结中的应用价值

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。超声造影是探查前哨淋巴结和评估其病变的有效手段。目前，超声造影评估前哨淋巴结在国内刚刚起步，其超声造影声像图特征尚未完全明确。本研究系统的总结了淋巴结超声造影的特征及其类型，对国内今后开展相似研究具有一定的借鉴作用。

摘要

目的分析经皮乳腺超声造影(CEUS)显示乳腺癌前哨淋巴通道(SLCs)走行方式及前哨淋巴结(SLN)的灌注方式，探讨其对诊断前哨淋巴结转移的价值。

方法以穿刺病理检测结果为金标准，回顾性分析66例乳腺癌患者同侧腋窝的101枚SLN造影结果，体表标记SLCs通道及淋巴结的位置，随后粗针穿刺活检病理证实SLN的良恶性;根据淋巴结的不同灌注方式分为5组且评分，采用MecNemar检验及构建患者的工作特征(receiver operating characteristic, ROC)曲线，若 $p < 0.05$ 则有统计学意义，最后确定截断值，再对超声检查筛检实验结果进行评价。

结果66例患者超声造影成功检出SLN101枚，淋巴结穿刺标本中42枚为转移性淋巴结，59枚为未转移性淋巴结，ROC曲线下面积为0.752，($P < 0.05$)，ROC曲线截断值为3.5，故评分为4和5分的淋巴结，则为阴性，评分为1，2，3分的淋巴结则为阳性，该筛查试验的灵敏度为44.19%，特异度为93.10%，假阴性率为43.19%，假阳性率为6.9%，符合率为72.28%，阳性预测值为82.61%，阴性预测值为69.23%。

结论经皮CEUS显示的SLN灌注模式对评估SLCs的走形方式及判断SLN的良恶性有较高的实用价值

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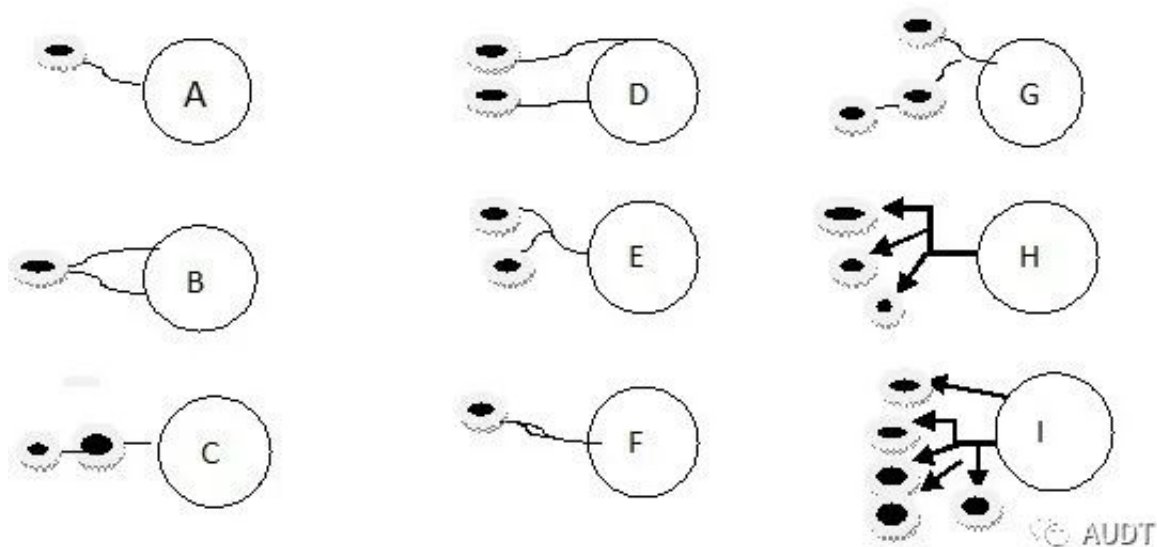
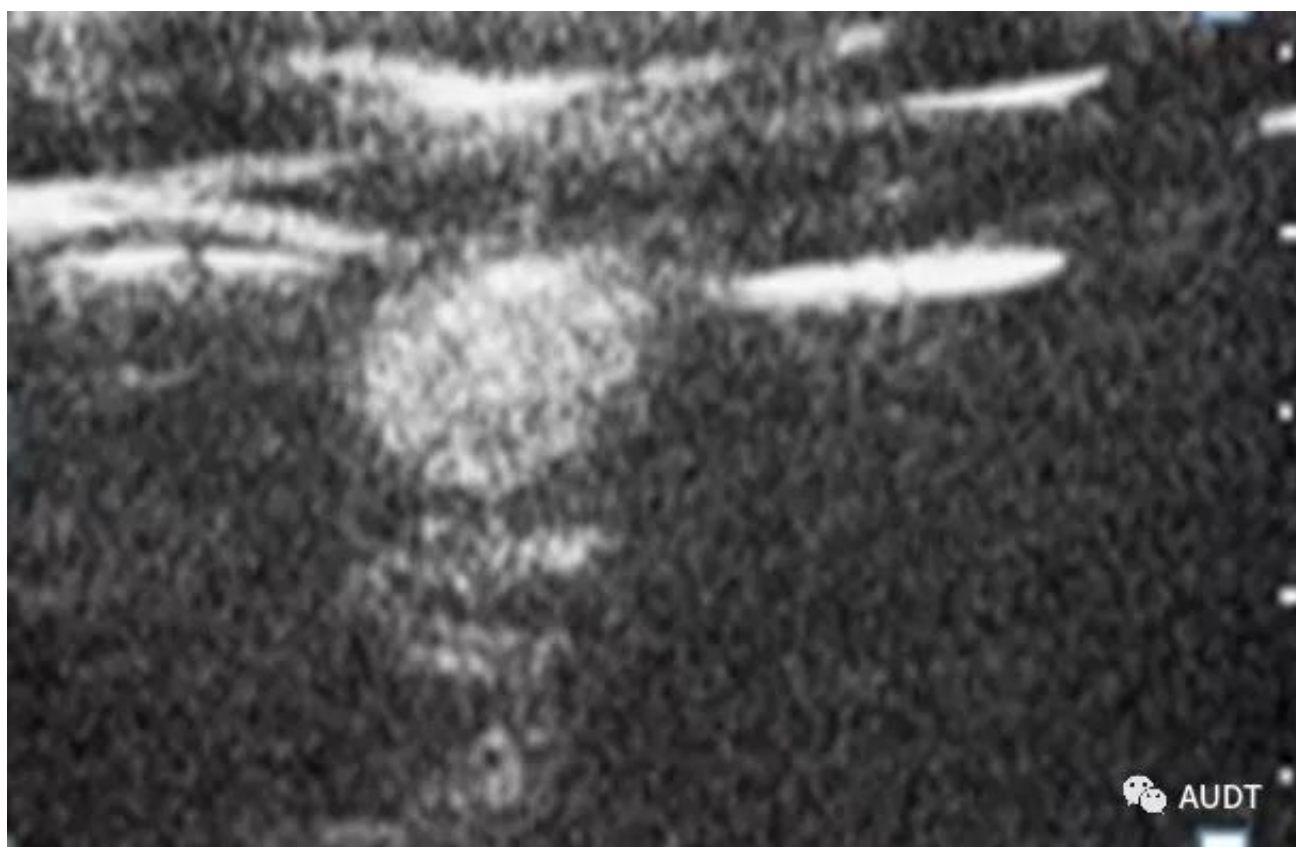
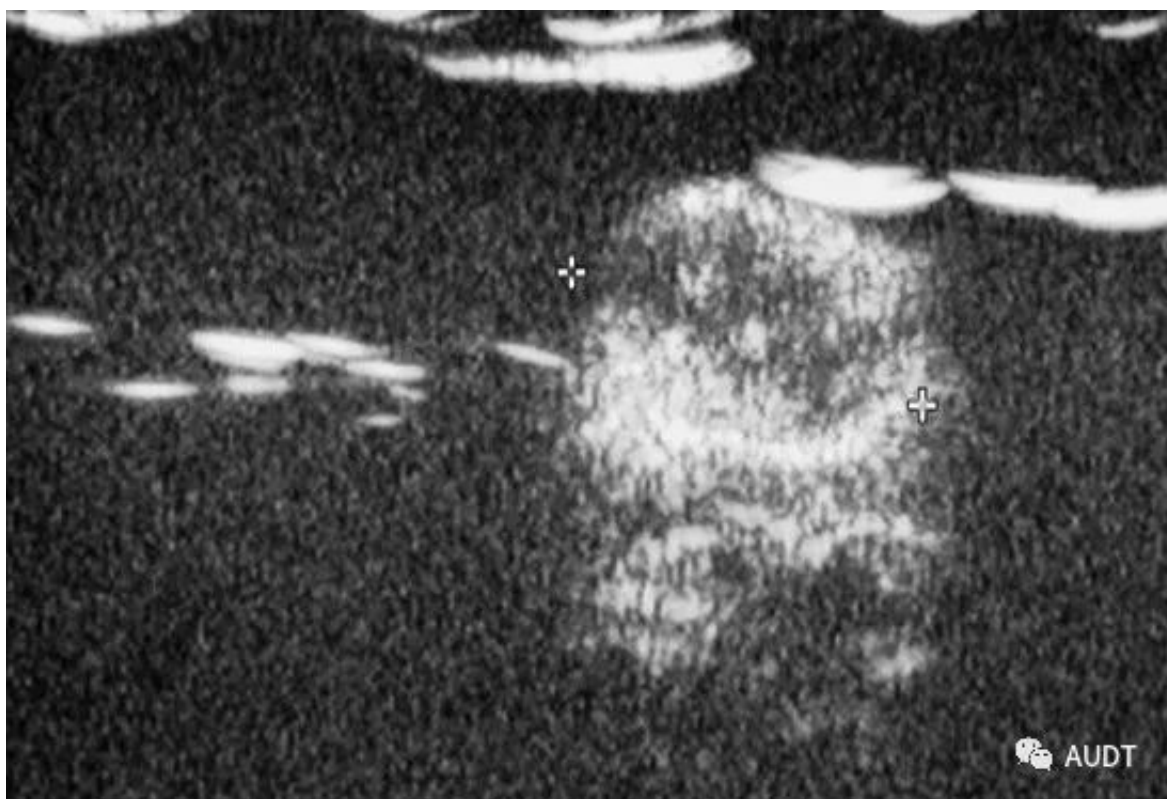


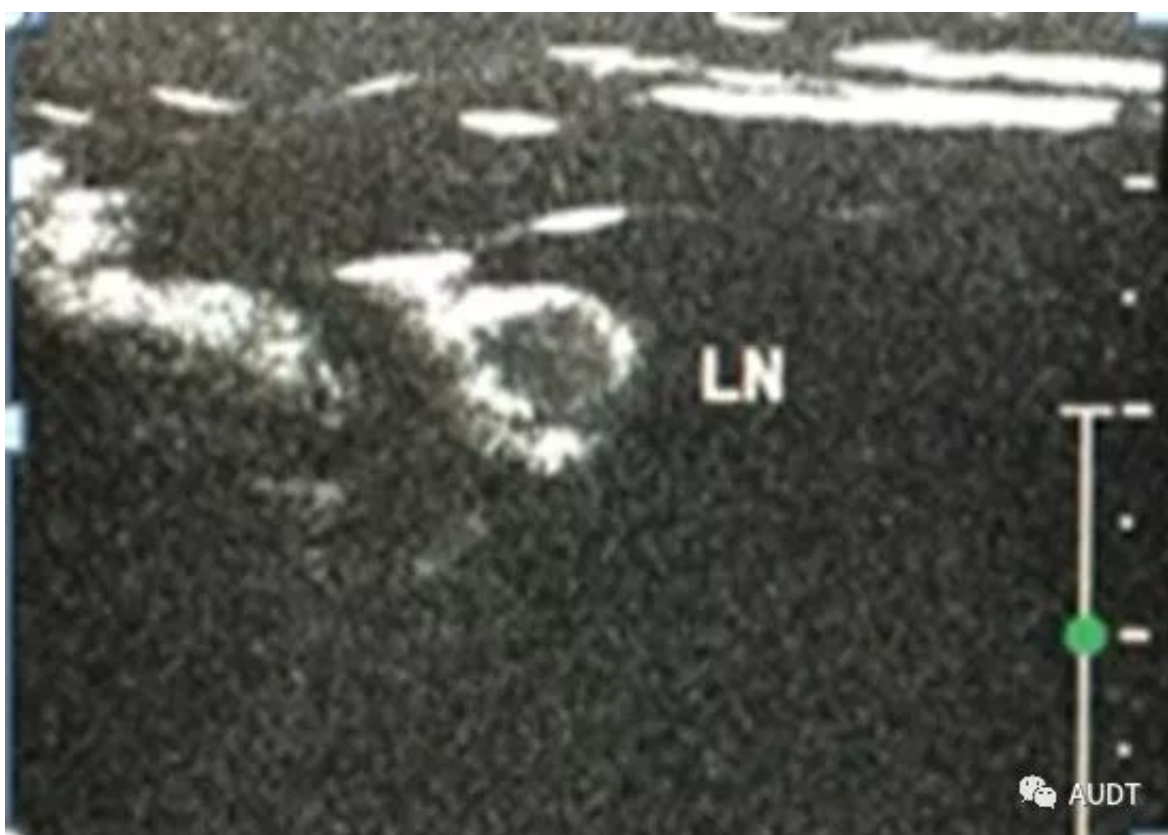
图1前哨淋巴通路走形及引流SLN方式。a：1支淋巴管引流至1枚前哨淋巴结;b：2支淋巴管引流至1枚前哨淋巴结;c：1支淋巴管引流至2枚前哨淋巴结;d：2支淋巴管引流至2枚前哨淋巴结;e：1支淋巴管引流至2枚前哨淋巴结;f：2支淋巴管引流至1枚前哨淋巴结;g：2支淋巴管引流至3枚前哨淋巴结;h：1支淋巴管引流至3枚前哨淋巴结;i：2支淋巴管引流至5枚前哨淋巴结，其中一支引流至一枚前哨淋巴结，一支引流至4枚前哨淋巴结



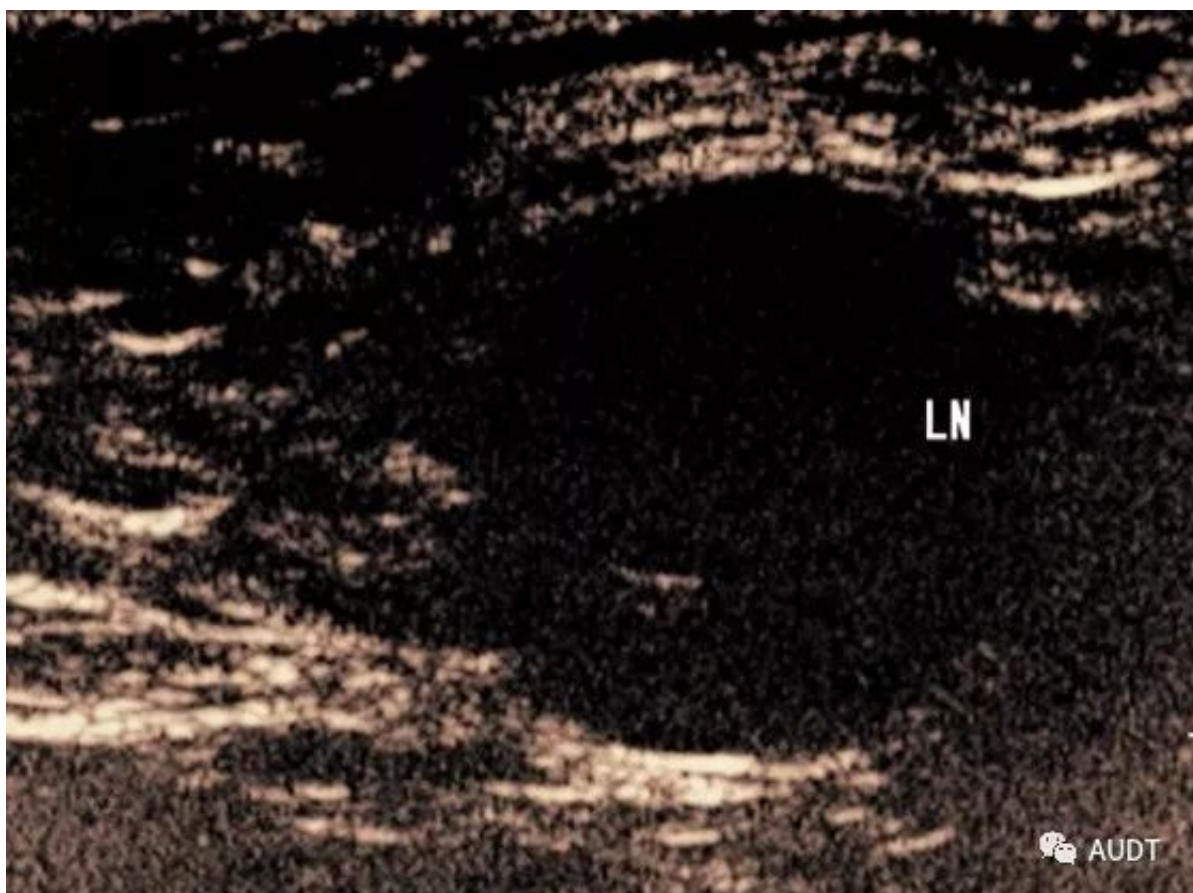
A：整体均匀高增强;



B：不均匀高增强;



C：不完整环状高增强;



D：无增强;

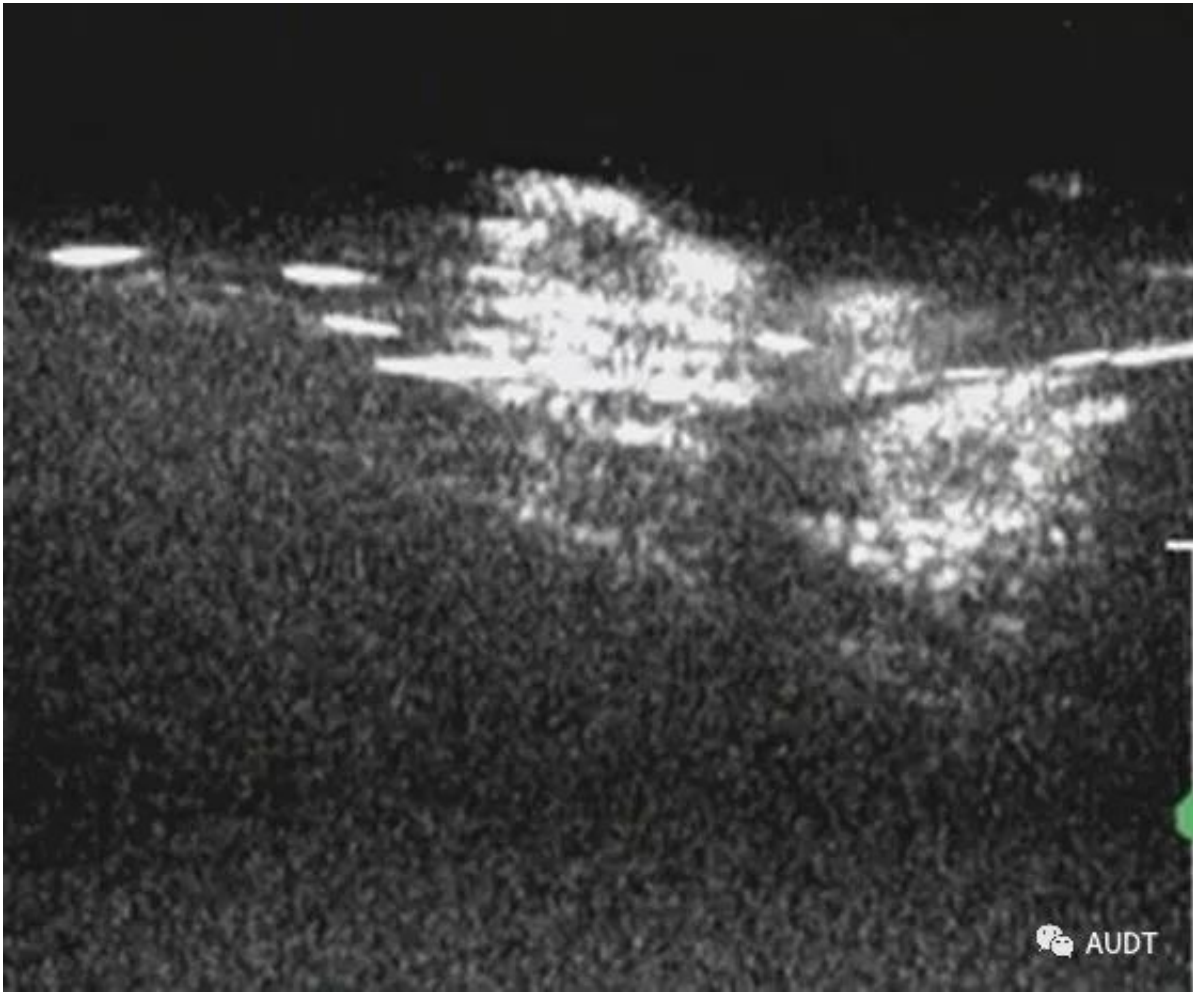


图2前哨淋巴结显影方式。E：完整环状高增强

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本文精要导读：

The Value of Percutaneous Contrast-Enhanced Ultrasound in the Evaluation of Sentinel Lymph Node of Breast Cancer

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Objective: To analysis breast cancer sentinel lymph channels (SLCs) and the shape of the sentinel lymph nodes (SLNs) perfusion by contrast-enhanced ultrasound (CEUS) and to explore its value in the diagnosis of sentinel metastasis lymph nodes.

Methods: A retrospective analysis, 66 breast cancer patients with 101 ipsilateral axillary SLNs checking by CEUS, was confirmed by pathology. SLCs and SLNs positions were marked and then the rough needle biopsy pathology was used to confirm the benign or malignant SLNs. According to the different perfusion, SLNs were divided into five groups and evaluated by scores. MeeNemar test and receiver operating characteristic (ROC) curve were used to analyze the statistical analysis. The difference of $p < 0.05$ was statistically significant. The cut-off value was finally determined, and the results of ultrasound screening test were evaluated.

Results: A total of 66 patients with 101 SLNs were successfully evaluated, including 42 cases of metastatic lymph nodes, and 59 cases of benign lymph nodes. The area under the ROC curve was 0.752 ($p < 0.05$). To ROC curve, the cut off value was 3.5. The scores 4 and 5 of lymph nodes were negative, and scores 1, 2, 3 of lymph nodes were positive. The sensitivity, specificity, false negative rate, false positive rate, and the coincidence rate of the screening test were 44.19%, 93.10%, 55.81%, 6.9%, 72.28% respectively. The value of positive predictive and the negative predictive were 82.61%, 69.23% respectively.

Conclusion: To evaluate SLCs shape and judge benign and malignant SLNs, percutaneous CEUS has a high practical value.

Keywords: Breast cancer; Contrast ultrasound; SLNs; Needle biopsy

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Axillary lymph node status is an important prognostic factor for breast cancer. Compared with conventional axillary lymph node dissection (ALND), non ALND can reduce complications, such as nerve and vascular injury, upper limb lymphedema, upper limb pain and numbness, and disturbance of upper limb activity [1]. Therefore, sentinel lymph node biopsy (SLNB) has become a consensus for preoperative evaluation of axillary lymph node status in patients with early breast cancer who have been treated for the first time. With the development of basic and clinical research on breast cancer, the application of neoadjuvant

chemotherapy is becoming more and more extensive before operation which is not only applied to locally advanced breast cancer, but also in early breast cancer. Since the lymph nodes and lymphatic channels (LCs) of the patients with breast cancer are blocked or fibrosis, the changed original lymphatic drainage pathway will affect the accuracy of the sentinel lymph node biopsy. Moreover, the number of lesions decreased in some patients after neoadjuvant chemotherapy, resulting in a lower SLNs positive rate [2]. Whether SLNB can replace ALND in this part of the patients is a meaningful and worthwhile subject. Our study was to investigate the

¹The authors contributed equally to this work and should be considered co-first authors.

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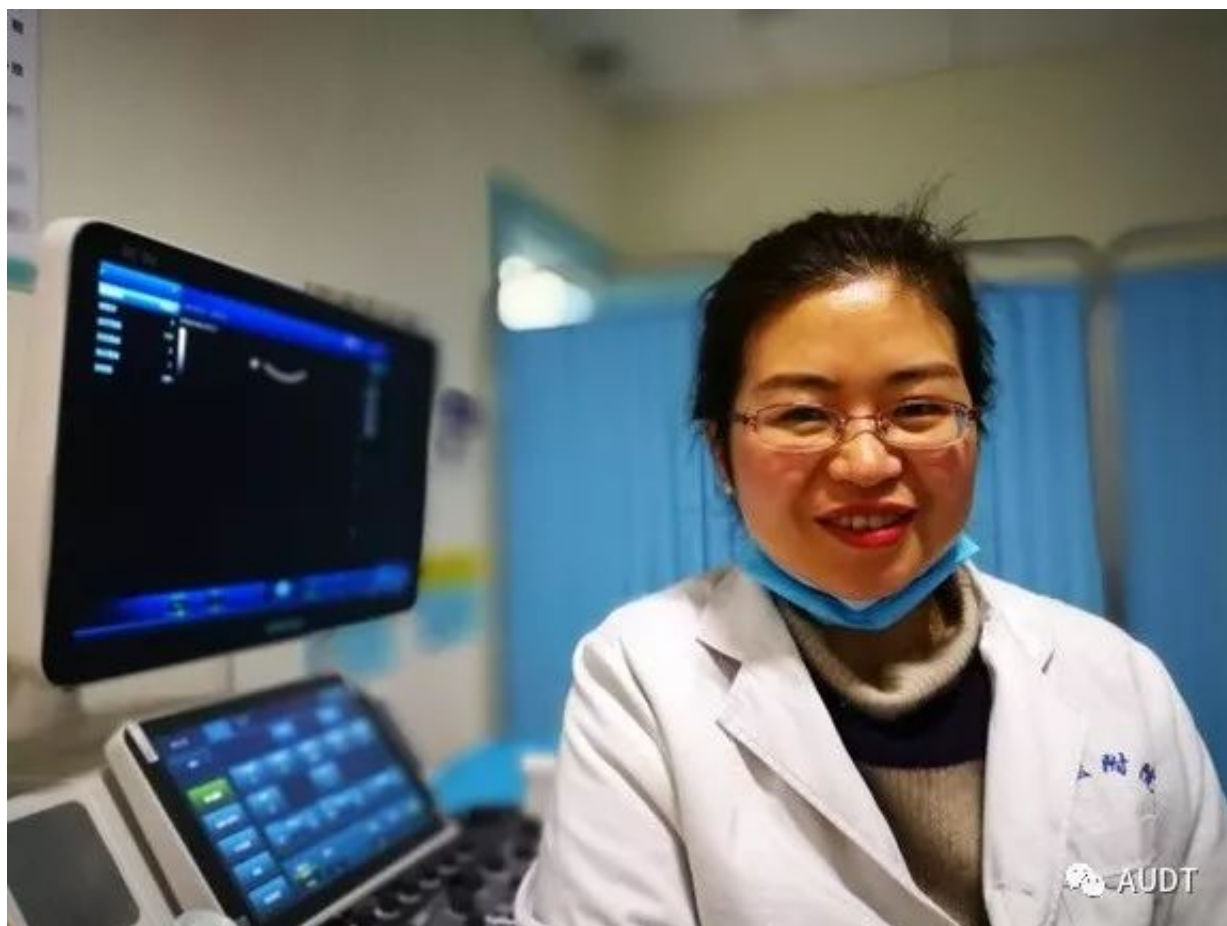
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