



US2.AI

Validation of a deep learning-based workflow for the interpretation of the echocardiogram in a cardio-oncology population

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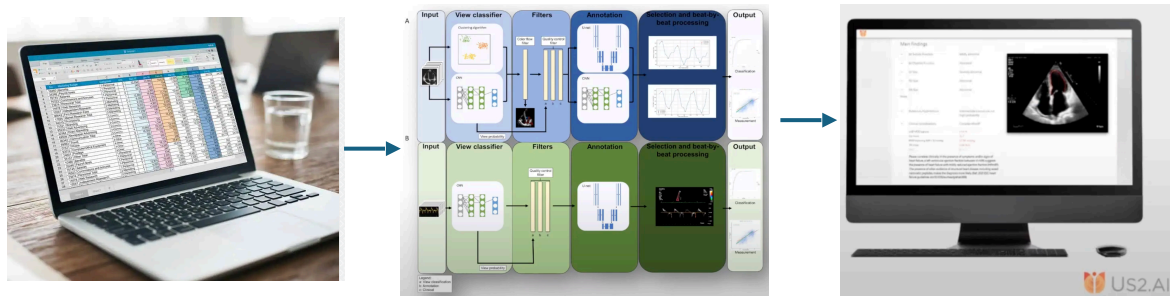


Echocardiography is the cornerstone for risk stratification, diagnosis, and monitoring of CTRCD (1). AI-echocardiography has shown high accuracy and reliability in diverse cardiac populations and may reduce variability while improving workflow efficiency(2, 3). However, this technology has not yet been validated in a **dedicated cohort of patients with cancer**.

Aim: To evaluate the accuracy of AI-guided echocardiography in assessing LVEF and additional parameters, compared with conventional echo, in a cardio-oncology population.

Methods:

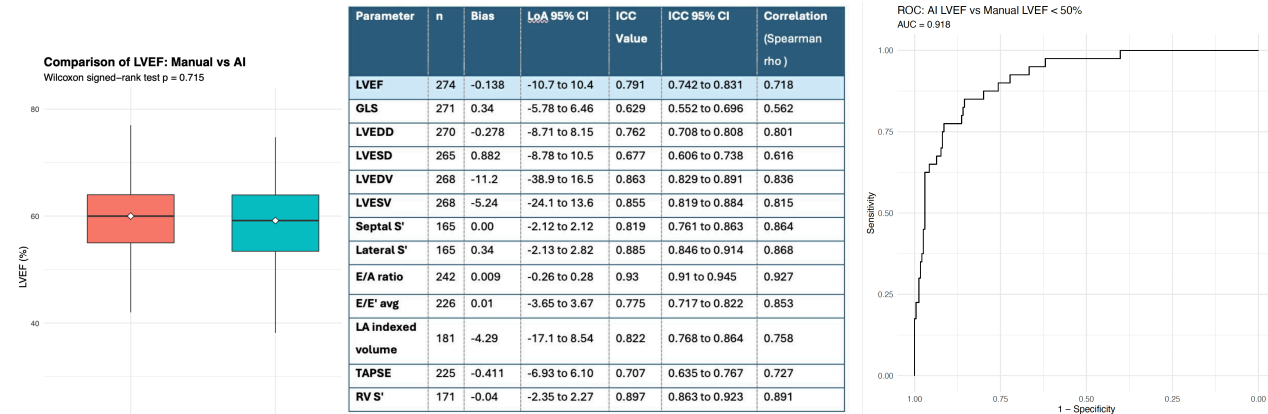
Patients from the cardio-oncology registry. Scans that had already been analysed and reported manually by expert sonographers, were uploaded to the US2.ai platform for automated analysis.



- **The primary outcome** was the level of agreement (LoA) for LVEF.
- **Secondary outcomes** were LoA for additional echocardiographic parameters and LoA between AI- LVEF and 3D LVEF.
- The **performance of the deep learning (DL) algorithm** in identifying LVEF <50% was evaluated using the area under the receiver operating characteristic curve (ROC-AUC).
- **Subgroup analyses** were performed in predefined populations clinically relevant in cardio-oncology.

Results:

- 282 patients included.
- Mean age: 60 ± 16 years, 61% women. Breast cancer was the most frequent malignancy (30.5%), followed by haematological malignancies (16.7%).



- 3D echocardiography LVEF vs AI-derived 2D LVEF showed narrower limits (bias: -0.13, 95% LoA: -9.51 to 9.26).
- Subgroup analyses showed consistent agreement in patients with breast cancer, body mass index >30, prior radiotherapy and pericardial effusion.

Conclusions:

In a large real-world cardio-oncology cohort, AI-guided echocardiography demonstrated **strong agreement** with conventional echocardiography for LVEF assessment and **high accuracy for detecting clinically relevant LV dysfunction**. Performance was consistent across key subgroups, supporting the feasibility, reliability, and potential clinical value of integrating DL-based analysis into routine cardio-oncology echocardiographic workflows.