

How I do it: feasibility of a new ultrasound probe fixator to facilitate high quality stress echocardiography

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Background

Stress echocardiography (SE) has recently regained momentum as an important diagnostic tool for the assessment of both ischemic and non-ischemic heart disease. Performing SE during physical exercise is challenging due to a suboptimal patient position and vigorous movements of the patient's chest. This hampers a stable ultrasound position and reduces the diagnostic performance of SE. A stable ultrasound probe position would facilitate producing high quality images during continuous measurements. With Probefix (Usono, Eindhoven, The Netherlands), a newly developed tool to fixate the ultrasound probe to the patient's chest, stabilization of the probe during physical exercise is possible.

Implementation and results

The technique of SE with the Probefix and its' feasibility are evaluated in a small pilot study. Probefix fixates the ultrasound probe to the patient's chest, using two chest straps and a fixation device. The ultrasound probe position and angle may be altered with a relative high degree of freedom. We tested the Probefix for continuous echocardiographic imaging in 12 study subjects during supine and upright ergometer stress tests. One patient was unable to perform exercise and in two study subjects good quality images were not achieved. In the other patients (82%) a stable probe position was obtained, with subsequent good quality echocardiographic images during SE.

Conclusion

In this pilot study, the feasibility of Probefix is demonstrated for stress echocardiography during ergometer tests in supine and upright positions. Although SE with Probefix will not be achievable in all patients due to extensive SE imaging protocols or poor image quality, we believe that the Probefix enables good quality continuous echocardiographic monitoring. Therefore Probefix is able to improve the implementation of an existing diagnostic tool. Validation and scientific proof of the efficacy of this device must be further studied in a larger patient cohort.



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