Stress echo in Italy: state-of-the-art 2015

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Methods

A list of accredited echocardiographic laboratories was obtained from the SIEC. Each head of an echocardiography laboratory was contacted by mail.

An electronic questionnaire was designed to identify the current clinical stress echocardiography practice within each unit during the preceding year. The questionnaire was loaded onto a commercially available electronic template. The questionnaire was e-mailed to the head of echocardiography at each echocardiography unit in April 2016. Data requested were relative to 2015 activity.

For allocation of the response, the questionnaire required general information, such as the name of the hospital, the investigator, and the name of the person interviewed.

1. General information: date, name of the hospital, department, name of interviewed physician;
2. Number of stress echocardiography studies during the year 2015;
3. Type of stress used;
4. Main diagnostic echocardiographic end points beyond regional wall motion abnormalities.

Data are expressed as numbers (percentage) for categorical variables.

Results

Of the 189 echocardiographic laboratories (out of the 210 polled) that responded to the electronic survey, stress echocardiography was performed in 125 laboratories (67%), with a mean value of 216 stress echocardiography/year and a grand total of 26,996 stress echocardiography tests; 20 (13%) labs had high (>400/year), 67 (62%) moderate (100–400/year) and 38 (25%) low volume (<100/year) activity. The stressors employed were: dobutamine in 114 (91%), vasodilators in 103 (82%; dipyridamole in 103 and adenosine in 90), semi supine exercise with tilting ergometer in 70 (56%), and noninvasive pacing (in patients with permanent pacemaker) in 8 (6%) laboratories. All three main forms of stressors, tailored to each patient’s clinical profile, were used in 54 (43%) laboratories (Fig. 1). The diagnostic end point was always regional wall motion analysis, with addition of...
coronary flow velocity reserve on left anterior descending coronary artery during vasodilator test, whenever possible, in 64 (51%) laboratories.

Stress echocardiography activity was present in 67% of Italian cardiology units, compared with 60.6% in the UK and 49% in Austria. The semi supine exercise is recommended by European guidelines and the practice across Italy reflects these recommendations. Of laboratories using vasodilator stress, over 50% employ dual imaging with combined and simultaneous assessment of regional wall motion and coronary flow reserve, which adds incremental and complementary diagnostic and prognostic value to the conventional test. Dual imaging is, currently, the recommended standard by European guidelines whenever technology and expertise allow.

Some study limitations must be acknowledged. Of the about 800 echocardiographic laboratories present in Italy, only a minority are present in the SIEC mailing list. In this group, the response rate was 189/210 (90%). Both the presence of activity not visible to the scientific society and the relatively low response rate may limit the generalizability of the findings, more informative in reflecting the relative use of different techniques than in estimating the absolute volumes of activity across the nation.

We did not assess the stress echocardiography applications beyond CAD: which are now attracting increasing attention from the stress echocardiography community and are also the objective of the ongoing stress echocardiography 2020 study, but were not a common indication at the time of study design and completion.

A possible concern is that one out of four laboratories have a limited activity, with volumes below the threshold of 100 investigations per year needed for maintaining competence, teaching, and training. New approaches to web-based training, quality control, and remote real-time reading are needed at this point, and are currently under investigation within the framework of stress echocardiography 2020 study.

In conclusion, the present survey describes a vital, active, and versatile stress echocardiography community, open to innovation and capable of transferring scientific evidence to everyday clinical practice with only a short time lag. Overall, the described framework is a suitable cultural and logistic infrastructure for building the new generation of studies exploring new aspects of stress echocardiography. The stage is set for prospective, large-scale, multicenter effectiveness studies assessing the feasibility and value of dual (regional wall motion and coronary flow reserve), triple (and left ventricular contractile reserve assessed as force reserve), and quadruple imaging (and B-lines), in the stress echocardiography 2020 study.

Acknowledgements

Stress echo 2020 study group


Conflicts of interest

There are no conflicts of interest.

References


10 Picano E, Scali MC. Stress echocardiography, carotid arteries, and more: it’s versatility for our imaging times. Editorial comment. *JACC Cardiovasc Imaging* 2017; (in press).
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