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EuroEcho-Imaging 2017

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Title : Upstream Quality Control of B-line in Stressecho 2020
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Background: The effectiveness trial "Stress echo (SE) 2020" is at the starting blocks to evaluate novel applications of SE in and beyond coronary artery disease. Besides the assessment of regional wall motion (RWM), the core protocol also includes 4-regions scan of B-lines by lung ultrasound (LUS), which is essential to assess pulmonary congestion and refine prognostic stratification in coronary artery disease and heart failure patients.

Purpose: To provide upstream quality control and harmonize B-lines reading criteria across SE2020 centers.

Methods: One cardiologist-echocardiographer from each of 45 centers from 13 countries (Argentina, Brazil, Bulgaria, Costa Rica, Hungary, Italy, Lithuania, Poland, Portugal, Russia, Serbia, UK, USA) of SE 2020 network read a set of 20 LUS video-clips selected by the core lab. All aspirants met the pre-requisite of high volume activity (>100 studies per year) and previous pass of the quality control for regional wall motion abnormalities. The core lab prepared for readers an obligatory web-based learning 2-hours module (http://se2020.altervista.org). Each test clip was scored from 0 (black lung, no B-lines) to 10 (white lung, see Figure). The diagnostic gold standard was the reading of core lab. The answer of the reader was considered correct if concordant with core lab reading ±1 (for instance, core lab reading of 5 B-lines; correct answer 4, 5, or 6). The a priori determined pass threshold was 18/20 (≥90%) with R value >.90.

Results: Of the initial 45 readers who started, 7 did not complete the attempt and 38 were successfully accredited, 23 (57%) on first attempt. The average time to completion of test was 14.6 min; 33 readers were B-lines naive (without previous exposure to B-lines). All accredited readers started to use it in everyday routine during physical or pharmacological SE in all-comers enrolled in SE2020 for known or suspected coronary artery disease and/or heart failure and enrolled 903 patients with dual imaging (regional wall motion and B-lines) as per May 24, 2017. Conclusions: A user-friendly web-based learning is highly effective for training B-lines also in echocardiographers without previous exposure to B-lines. After a limited learning effort, the accuracy of B-lines reading is comparable between very experienced and freshly trained readers. B-lines are becoming an integral part of dual imaging SE adopted as the core protocol in SE2020 for all forms of physical and pharmacological stress.
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