The Ultrasonic Stethoscope: The New Instrument in Cardiology?

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In a previous editorial, I directed my comments to those of us responsible for training young physicians in the art of cardiovascular physical diagnosis, making the point that we were doing a poor job and that there are data to back up that statement.2

A few years ago, Harvey Feigenbaum, M.D., commented that he considered the traditional stethoscope a misnomer. He thought it would be more appropriate to call this traditional instrument a “stethophone” since its main attribute was auditory. He also thought it more appropriate to call cardiac ultrasound the “stethoscope,” since the data obtained with this device was obviously visual and appeared on a scope.

More recently, J.R.T.C. Roelandt, M.D., in a review article, further refined this point by indicating that the word stethoscope is derived from the Greek (stethos = chest and skopein = see). Thus, this term more appropriately applies to ultrasound and the now newly defined ultrasound stethoscope.4

In his review, Roelandt focuses our attention on the miniaturization of battery-powered high-resolution portable ultrasound imaging devices. He argues in this review, quite persuasively, that the small ultrasound imaging device “will change the practice of physical examination and diagnosis.” Richard Popp seems to agree with him and has stated that it “now common experience that a limited echo/Doppler examination is able to provide more diagnostic accuracy, together with quantitative information, than the physical examination, including inspection, palpation, and auscultation.”5

It is my understanding that even the strongest proponents of this miniaturized ultrasound stethoscope insist that it does not replace standard echocardiography, which obviously involves a more comprehensive examination performed by and interpreted by an expert.

Roelandt claims that evaluation of pericardial effusion, left ventricular dimension, left ventricular function, and left ventricular hypertrophy are relatively easy to accomplish with a moderate amount of training.

In addition, in urgent situations such as cardiac tamponade or right ventricular dilatation in acute myocardial infarction, cardiogenic shock possibly related to hypovolemia can be assessed after a fluid challenge, and the effects of intravenous inotropic drugs can be evaluated by assessing ejection fraction, and so forth. One area where this might be particularly useful is in patients with chest pain of uncertain etiology in which the electrocardiogram is not diagnostic of myocardial ischemia or myocardial infarction. In the emergency center, the detection of a regional wall motion abnormality in such a patient might alter the direction that further work-up is headed.

One examination that I had not thought very much about and that is not generally done by American cardiac ultrasonographers is the screening of abdominal aortic aneurysms. I have said many times to students, housestaff, and fellows that palpating an abdominal aortic aneurysm is not easy work. Even in a thin patient, the accuracy of measurement is quite poor compared with ultrasound or computed tomography measurements. In patients with coronary artery disease, the presence of peripheral arterial disease is not uncommon. Use of the ankle brachial index (ABI) and ultrasound measurement of the abdominal aorta may uncover more disease than was initially suspected.

Roelandt finishes his review by making certain it is clear that these new devices “should be used in a way comparable to auscultation; whenever there is doubt, further echo/Doppler examination is indicated.” I think it is important to end on that note, but it will be interesting to see how the use of these devices plays out in the United States. I, for one, plan to give them a try in patients that I see as inpatients and outpatients.

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References