Updating our skills in Doppler sonography

Over the past 10 years, vascular sonography has assumed increasingly important roles in the workup of common arterial and venous circulatory disorders. Starting in the late 1980s, sonographic studies of the blood vessels were performed with pencil-sized transducers designed to exploit the so-called Doppler effect, a phenomenon first described by the Austrian mathematician Johann Christian Doppler (Salzburg 1803 – Venice 1853) following his observations of the “colored light of the stars.” The stage was thus set, but it was not until the mid-1950s that the Doppler principle found concrete application in the field of ultrasound.

For years thereafter, arterial vessels were studied by placing a transducer over anatomic landmarks to record flow velocity signals -Doppler signals. On the basis of the signal characteristics, the operator was able to identify the vessel and determine whether or not it was stenotic. The turning point -in terms of the method’s remarkable success- came in the early 1990s, with the introduction of new “linear” transducers that allowed real-time visualization of the vessel itself and the blood flow through its lumen. With this development, ultrasonography took a giant leap forward. The pioneering phase was over: the technique gained acceptance within the scientific community and was increasingly used in day-to-day clinical practice.

Thanks to its low invasiveness, its relatively low cost, and its continuous technological development, color Doppler sonography has become the first-line imaging study for investigating the major disorders involving arteries and veins. And because it furnishes information on flow velocity as well as vessel morphology, it has largely replaced certain more invasive techniques, like phlebography, which was once widely used for the study of venous thrombosis. In other cases (e.g., carotid angiography), it has transformed the more invasive approach from a diagnostic to an exclusively interventional procedure.

The *Italian Society of Ultrasonology in Medicine and Biology* (SIUMB) has been a major player in the diffusion of

vascular sonography and the standardization of techniques. Its Specialist Schools for the Study of Color Doppler Sonography and the numerous courses and workshops it has organized or promoted have provided rich opportunities for ongoing professional development in this field. So for all of us, the key note is “back to school”, to hone and update our skills not only in the field of Doppler ultrasound but in all sectors of ultrasonography -because a good sonographer knows how to exploit the full potential of this versatile imaging modality- and with pleasure and passion, indispensable requisites for any sonographer.

As part of the Society’s ongoing commitment to teaching, the members of the *Section for Vascular Studies* have contributed actively to the current issue of the *Journal of Ultrasound*, with articles on various aspects of Doppler sonography that we hope will be useful resources for our readers.

Appendix A. Supplementary material

Supplementary material related to this article can be found online at <http://dx.doi.org/10.1016/j.jus.2012.06.008>.

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