Future of vascular ultrasound

Hirotochi Hamaguchi¹

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Vascular ultrasound is a modality with a short history. In the 1980s and the 1990s, carotid ultrasound was used in a clinical setting at some institutions for the assessment of intima-media thickness (IMT) and plaque, but vascular ultrasound had not yet become common in other vascular areas. In 2001, vascular ultrasound gained attention because carotid ultrasound was used in secondary health examinations in Japan, and lower extremity venous ultrasound was used for diagnosis of deep vein thrombosis with economy class syndrome. The center of focus then shifted to assessment of the aorta and lower extremity arteries in arterial disease, and renal artery stenosis drew attention as a means of diagnosing hypertension. The role of vascular ultrasound gradually drew more and more attention in various areas, such as diagnosis of varicose veins and shunt placement and management in dialysis patients. Recently, lower extremity venous ultrasound has played an especially important role in the diagnosis of deep vein thrombosis after earthquakes.

Vascular ultrasound requires examination of blood vessels throughout the body. Therefore, everything from the probe used to the unit settings must be changed depending on the site to be examined or the nature of the examination. On the other hand, vascular ultrasound can meet the needs of a variety of departments by providing a wealth of information on vascular anatomy and diseases.

Thanks to continued improvements in the performance of ultrasound devices, vascular ultrasound can be used to perform a greater range of assessments in a noninvasive manner, yet I often get the feeling that there is still much more potential to be discovered. In the case of measurement of carotid IMT, for example, measurements can easily change depending on the unit settings or the skill of the operator. The fact is that there are still many aspects of vascular ultrasound that have not been established from both a technical and diagnostic standpoint. Vascular ultrasound is just now arriving at the starting line, and it is my expectation that a wonderful future awaits it.

✉ Hirotochi Hamaguchi
hirotoshi_hamaguchi@kitahari-mc.jp

¹ Department of Neurology, Kita-Harima Medical Center, Ono, Hyogo, Japan