



국문제목

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Doppler Waveforms in Carotid and Vertebral Arteries

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Carotid atherosclerotic disease is one of the major preventable causes of ischemic stroke.

Duplex ultrasound is well established as an accurate, non-invasive method for evaluating the extracranial carotid arteries in patients with manifested or suspected cerebrovascular disease.¹ This technique is inexpensive and portable, and provides reliable information on the localization and extent of stenosis, flow dynamics, plaque structure, and vessel-wall characteristics. It is used both for screening and for preoperative assessment in many institutions.

Duplex ultrasonography of the vertebral artery (VA) is an integral part of extracranial cerebrovascular screening and provides noninvasive diagnostic clues for vertebral artery stenosis.² While the relationship between VA disease and clinical neurological signs and symptoms are much less defined than the carotid circulation, the advantage of VA ultrasound (quick, non-invasive method of assessment) can indicate abnormality and clarify selection of subsequent imaging modalities.³

The essential role of duplex ultrasonography studies is the detection and characterization of atherosclerotic disease and

stenosis. Doppler sonography samples are used primarily to quantify velocity elevations at sites of stenosis. However, more subtle clues to disease are contained in the shape and contour of the Doppler sonography waveform itself. Aberrations of waveform morphology can signal regional disease in the carotid and vertebral vessels, remote cardiovascular disease, and iatrogenic conditions.⁴ The shape and character of carotid and vertebral waveforms can disclose a variety of underlying cardiovascular abnormalities. Systemic circulatory disorders and regional flow disturbance in the vessels of the neck can be suspected and diagnosed with close inspection for changes in the pulse contour.

In this time, we will discuss the fundamentals and clinical values of Doppler waveforms in carotid and vertebral arteries.

1. Spectral Doppler Instruments
2. Typical Carotid and Vertebral Artery Waveforms
 - Waveform Changes in Systole
 - Waveform Changes in Diastole
 - Waveform Changes throughout the Cardiac Cycle

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