Can we replace the electrophysiologic study with the ultrasonographic examination in the diagnosis of carpal tunnel syndrome?

Seung bum Chae, M.D.
Department of Orthopaedic Surgery, College of Medicine, Daegu Catholic University, Daegu, Korea

BACKGROUND
In orthopaedic field, ultrasonography has been used in diagnosis as time goes by and the usefulness of that has been also increasing in many occasions. Recent studies have carried out to compare the diagnostic value of the ultrasonography with electrophysiologic study in the diagnosis of carpal tunnel syndrome.

This study aim is to know the usefulness of the ultrasonography in diagnosis of carpal tunnel syndrome and possibility of replacement of the ultrasonography in diagnosis of the carpal tunnel syndrome instead of electrophysiologic study.

METHODS
Fifty one patients with unilateral carpal tunnel syndrome confirmed using Carpal Tunnel Syndrome-6 for the diagnosis of carpal tunnel syndrome were enrolled.

Ultrasonography was performed on both wrists by single radiologist who didn’t know the affected side. Electrophysiologic study was performed on both side by single examiner without any information of the affected side.

The cross-sectional area and the ratio of those between the inlet and the outlet were measured on the median nerve of the both side. We compared the accuracy of the ultrasonography and the electrophysiologic study in the diagnosis of carpal tunnel syndrome.

RESULTS
In patients diagnosed with carpal tunnel syndrome by the carpal tunnel syndrome-6, sensitivity and specificity of ultrasonographic measurement of the median nerve inlet diameter for diagnosing carpal tunnel syndrome was 0.818 mm² and 0.864 mm², and cutoff value was 0.105mm² respectively.

The sensitivity and specificity of ultrasonographic measurement of the inlet and outlet diameter ratio for diagnosing carpal tunnel syndrome was 0.886 and 0.886, and cutoff value was 1.29 respectively.

The sensitivity and specificity of the nerve conduction study was 0.841 and 0.818, respectively. There were no significant difference in diagnosing carpal tunnel syndrome by ultrasonography or nerve conduction study.

Ultrasonography have similar sensitivity and specificity for the diagnosis of carpal tunnel syndrome. But ultrasonography is non-invasive examination and has cost-effectiveness as well.

We conclude that ultrasonographic studies are highly accurate in the diagnosis of carpal tunnel syndrome and the electrophysiologic studies are not necessary in most cases.