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**Exploration of Use of Ultrasound to differentiate Carpal Tunnel Syndrome Associated with Axonal Degeneration****Xue Deng**

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**N**erve conduction studies (NCS) is clinically used to confirm the diagnosis and grade the severity of carpal tunnel syndrome (CTS), a median nerve entrapment due to chronic compression at wrist. However, the NCS cannot differentiate the CTS with demyelination alone from the disease with secondary axonal degeneration. As a cross-validated and sensitive diagnostic tool with NCS, it is unknown if ultrasound (US) can compensate the deficit. This study aimed at exploring US to differentiate demyelinated CTS from that in association with axonal degeneration. We studied 75 demyelinated CTS hands and 93 demyelinated CTS hands with axonal degeneration by comparing cross-sectional area (CSA-W) and perimeter (P-W) of median nerve at wrist, ratio of CSA and P of wrist over mid-forearm (R-CSA, R-P) measured by US. Results revealed significant differences in CSA-W ( $p < .0001$ ), P-W ( $p < .0001$ ), R-CSA ( $p = .007$ ,  $p < .05$ ) and R-P ( $p < .0001$ ). ROC curves indicated poor-to-fair accuracy of CSA-W (Area = .626,  $p < .0001$ ); P-W (Area = .695,  $p < 0.0001$ ), R-CSA (Area = .601,  $p = .025$ ,  $p < .05$ ) and R-P (Area = .662,  $p < .0001$ ). Our findings were consistent with previous relevant studies. We conclude that US may be potentially used to differentiate demyelinated CTS from that with axonal degeneration in clinical practice.

**Biography**

Mr. Xue Deng is a Hong Kong and U.S-registered Occupational Therapist. He has completed his Master of Occupational Therapy from Tufts University and bachelor's degree in Occupational Therapy from the Hong Kong Polytechnic University. He is now a PhD Candidate in the department of Orthopaedics & Traumatology from the University of Hong Kong. He has published several papers relevant to Occupational Therapy and has been serving as a reviewer for American Journal of Physical Medicine & Rehabilitation.

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