THE DIAGNOSTIC UTILITY AND COST EFFECTIVENESS OF USING A HANDHELD CARPAL TUNNEL SYNDROME TESTING DEVICE AT A DISTRICT GENERAL HOSPITAL

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INTRODUCTION

- The diagnosis of carpal tunnel syndrome (CTS) is primarily based on clinical symptoms and physical signs (1,3). Nerve conduction studies (NCS) objectively determine the severity and pre-treatment baseline status of median nerve lesion in CTS and facilitates differential diagnosis (1,4).
- This handheld NC device measures SNC (Sensory Nerve Conduction) in the median and ulnar nerves and uses the difference in these readings as an indicator of abnormality.
- The authors identified the cost-effectiveness of NCS performed by ESP (Extended Scope Practitioner) at a District General Hospital compared with Neurophysiological Testing by an external provider.
- Patients suspected of having carpal tunnel syndrome (CTS) have traditionally been sent to an Orthopaedic Unit.
- 141 patients with carpal tunnel syndrome over a 9 month period were tested. All patients were referred from the outpatients clinic at the Orthopaedic Unit.
- All patients were tested by ESP who had specific training in the use of the device.
- 18 out of 141 (12.8%) had to undergo further neurophysiological testing by an external provider.
- The selection criteria for inclusion for testing was based on the Boston Carpal Tunnel Questionnaire (BCTQ) including both primary and secondary symptoms.
- In house neurophysiological confirmation of CTS altered patient flow. Typical in house testing involves GP Referral, in house testing in the outpatient department and then listing for surgery.
- External testing involves GP Referral, outpatient clinic, external testing, outpatient clinic for review and then list for surgery as appropriate.
- A new handheld test device accelerates the electrodiagnostic confirmation of CTS. It is easy to use and the examination can be carried out by appropriately trained health care professionals.
- Reliable results are obtained within minutes.

MATERIALS & METHODS

- 141 patients with carpal tunnel syndrome over a 9 month period were tested. All patients were referred from the outpatients clinic at the Orthopaedic Unit.
- All patients were tested by ESP who had specific training in the use of the machine.
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- The selection criteria for inclusion for testing was based on the Boston Carpal Tunnel Questionnaire (BCTQ) including both primary and secondary symptoms.
- In house neurophysiological confirmation of CTS altered patient flow. Typical in house testing involves GP Referral, in house testing in the outpatient department and then listing for surgery.
- External testing involves GP Referral, outpatient clinic, external testing, outpatient clinic for review and then list for surgery as appropriate.
- The peripheral nerves are stimulated with electric pulses at the ring finger first.
- The nerve responses are recorded by electrodes on the palmar aspect of the wrist between the median and ulnar nerves.
- Peak latency measurements from median and ulnar nerves are automatically relayed to a PC with Mediracer Analysis Centre (MAC) software.
- The nerve response data from median and ulnar nerves are compared together in MAC and displayed on the screen to gather information to establish if the median nerve is compressed in the Carpal Tunnel.

RESULTS

- 141 patients were tested with a handheld nerve conduction measuring device.
- Total overall saving £16,850 between September 2009 and June 2010.
- Waiting time for the NCS reduced from three weeks to one.
- Waiting time for the carpal tunnel decompression was halved (12 to 6 weeks).
- Patient flow is different - fewer outpatient visits required.

DISCUSSION

- In patients examined for CTS suspicion, this new small handheld portable NC measuring device agreed with the findings of traditional NCS in 88% of cases.
- This method has certain limitations. The tester should be used for NCS only in cases with clinical suspicion of CTS.
- If the signs and symptoms originally suggest a diagnosis other than CTS, such as Generalised Neuropathy, Radioculopathy or more Proximal Nerve

CONCLUSIONS

- Compared to the traditional NCS this method provides the examiner with quick and reliable results.
- It is cost effective offering the opportunity for significant savings.
- The tester should be used for NCS only in cases with clinical suspicion of CTS.
- If the signs and symptoms originally suggest a diagnosis other than CTS, traditional NCS is needed.

REFERENCES