EDITORIAL

The Neurologic Examination – Art or Science?

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One of the time honoured traditions of clinical neurology is a detailed, systematic clinical examination of the various components of the nervous system. A quick auscultation of the heart and lungs or palpation of the abdomen may be sufficient for other specialties, but the neurologist has been considered a master of clinical skills and bedside techniques. Examinations are often performed with considerable flourish using a variety of tools – a colleague once told me about an eminent neurologist from South Africa who insisted that the only device suitable for testing light touch was an ostrich feather! Innocent bystanders are left suitably impressed with the neurologist's skill at eliciting subtle clinical signs named after ancient, sometimes obscure figures and arriving at a precise anatomical diagnosis.

Generations of medical students have been taught the ritual of the "complete neurological examination" and in many cases have been left with the impression that it is really not worthwhile embarking on such an exercise unless one has at least 30 minutes available. Considering the amount of time spent teaching and performing the neurological examination it is surprising that there have been few studies to validate its usefulness and determine which of the various manoeuvres are most likely going to have a positive yield in patients with neurologic disorders. Most experienced neurologists have evolved their own personal version of a screening neurological examination which requires only a few minutes, which is often modified to focus on the presenting clinical problem, and which they feel is usually sufficient to detect or rule out the presence of pathology within the central or peripheral nervous systems.

The paper by Teitelbaum et al in this issue of the Journal is a welcome addition to the relatively sparse recent literature on the neurological examination. In a well-designed study of 170 patients suspected of having a lesion affecting motor pathways in one cerebral hemisphere, they determined the sensitivity, specificity, and predictive value of six common procedures used to evaluate motor function – testing strength in multiple muscles in the extremities (segmental motor exam), straight arm raising with the wrists and fingers extended, pronator drift, fine finger movements, forearm roll (a procedure popularized by some clinicians during the past several years), and tendon reflexes. All patients had CT scans which confirmed the presence of a hemisphere lesion in about half the cases.

It may surprise some readers to learn that systematic examination of muscle strength in the extremities had both poor sensitivity and negative predictive value. However, it should be noted that these were not patients with hemiplegia or other obvious neurological deficits. The authors were looking for subtle changes suggesting the presence of a hemisphere lesion. All six tests used together had high sensitivity and specificity, but a combination of just three tests – pronator drift, finger tapping, and tendon reflexes (plus bilateral leg raising from a supine position in patients capable of doing this) appeared to be very satisfactory with close to 100% sensitivity and specificity. Forearm rolling appeared to be of very little value.

One could question the choice of tests used by Teitelbaum et al. Straight arm raising and pronator drift are probably different versions of the same manoeuvre. Other common tests of motor function such as the finger-nose test may have been useful. There is no mention of observing gait. Many neurologists would probably feel that this is one of the most valuable parts of the examination for detecting early involvement of motor pathways in the brain or spinal cord, or pathology in the basal ganglia or cerebellum and it would be interesting to see how clinical analysis of gait compared to the other tests used in this study.

This study focussed on tests for motor function. It would be useful to see a similar critical evaluation of other components of the neurological examination. What parts of the sensory examination are most likely to suggest an early lesion affecting sensory pathways? Which components of the cranial nerve examination are likely to have the highest yield?

Much of the neurological examination remains highly subjective and qualitative. Standardized scoring systems have been developed for some specific conditions such as stroke, Parkinson's disease, and multiple sclerosis and these are useful in clinical trials evaluating new therapeutic agents. However, there is a need to develop and validate more simple, rapid quantitative tests of neurological function to remove some of the mystique from the traditional neurological examination.

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