

By A/Prof Loong Si Chin



## Is the Neurological Examination Becoming Obsolete?

**C**linical examination is an integral part of the art of medicine. In neurology, probably more than in any other discipline, great importance is attached to the elicitation and interpretation of signs in the localisation of lesions. However, with rapid advances in technology, particularly in neuroimaging, some may feel that the era of the detailed neurological examination is coming to a close.

It is certainly true that any patient presenting with a headache can easily have a brain tumour excluded with a CT scan, whether or not a neurological examination has been performed first. However, not every patient can afford a CT scan. Moreover, a normal CT/MRI does not exclude certain serious pathologies such as chronic meningitis and cerebral venous sinus thrombosis. In other words, even after neuroimaging, one still has to rely on clinical judgment to decide whether further investigations are necessary.

A detailed neurological examination may be essential even when abnormalities have already been identified by neuroimaging. A common example is a patient who presents with hand numbness and who has had an MRI of her cervical spine, showing spondylotic changes at multiple levels. Clinical skill is still required to distinguish myelopathy from radiculopathy, to determine the level involved, and to ensure that her symptom is not simply due to carpal tunnel syndrome.

I have encountered some patients with gait problems who have had spinal surgery based on the radiological finding of cervical spondylosis. There was no improvement despite surgery as their symptoms were actually due to gait apraxia. Here, a neurological examination might have revealed that there was no myelopathy and spared them the operation. A few asymptomatic patients with similar radiological changes have even been advised to undergo surgery in case a future fall



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renders them quadraplegic. In these, thankfully rare, instances, the clinicians involved have apparently forgotten that it is the patient's condition and not the 'sick' MRI which should be the primary consideration in determining the need for surgery.

It is clear that a detailed neurological examination may be necessary despite positive radiological findings. Moreover, it may also be necessary *because of* positive radiological findings. This scenario is familiar to all neurologists: a patient with vague symptoms has had an MRI of the brain showing nonspecific abnormalities. The neurologist now has to determine just how significant these abnormalities are. There is an interesting paper by Weber and Knopf (J Neurol Sci 2006;240:81-84) which shows that abnormal brain MRIs are anything but rare. They studied 2,536 healthy young men, members of Germany's air force, all of whom had had a brain MRI as part of the process of applying for military flight duties. Approximately a quarter of the MRIs had findings which were considered either "variations of normal" (18.45%) or "abnormal" (5.8%).

It may be argued that the increasing sensitivity of neuroimaging techniques now has to be matched by improvements in the effectiveness of the clinical examination. Improvements, however, do not necessarily mean greater sophistication or complexity. Indeed, improvements should ideally lead to simplicity rather than complexity.

Although the neurological examination has often been applauded for its fascinating Holmesian aspects, it has also acquired a reputation for being complex and arcane. This rather undeserved reputation is partly due to a rich legacy of clinical signs. In the early years, 'pearls' were handed down from master to disciple, often with little knowledge of their pathophysiological basis, and the entire neurological examination looked more like a complicated ritual than a systematic approach to problems. Fortunately, with advances in the neurosciences and better understanding of normal as well as abnormal reflexes or signs, the neurological examination has become increasingly more meaningful.

However, the old pearls are still being 'treasured' and many of them are 'marginal' ('soft') rather than 'core' signs. Neurologists find the 'marginal' signs useful as they can help to strengthen a clinical suspicion when core signs are absent or equivocal; they can

also be the 'icing on the cake' during bedside teaching, making the sessions more interesting. However, the students and non-neurologist clinicians may find them confusing and too time-consuming.

The neurological examination should be streamlined by focusing on core signs and reducing non-productive marginal manoeuvres. The time saved from learning fewer 'soft' signs can be better utilised in improving competency in eliciting 'core' signs. Recently, William Landau of the Washington University School of Medicine lamented the lack of standard instruction or supervision for the elicitation of what is probably the most famous of all core signs: the Babinski sign. He said: "I have too often observed bizarrely faulty performance by house officers, medical and neurologic, and, alas, by candidates for Board Certification in neurology." (Neurology 2005; 65:1150-1151)

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In the past few years, I have been mulling over the difficulty in filling neurological traineeship posts. This is not a local problem – it is shared by our American colleagues – and I wonder if there is not some fundamental reason for it. Perhaps the two points described above are contributory: the erroneous perception that neuroimaging has superseded the clinical examination and the false belief that clinical neurological examination is a black art acquired only through long and arduous apprenticeship. In actual fact, the rise of neuroimaging has made clinical examination more, not less important and, with proper guidance, the neurological examination can be no more complex or difficult than it needs to be. ■