HANDWRITING AS AN OBJECTIVE TEST OF PERFORMANCE ABILITY

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The assessment of physical improvement in paralytic patients is a difficult one, and so far most doctors adopt a point scoring system e.g. in rating muscle power, a scale of 0-5, where 5 is equivalent to full power and 0 equivalent to absolutely no movement. This sort of rating whilst useful for most purposes is not sensitive enough to detect other than very gross differences in ability. In the case of hemiplegia where the patient is able to write, we have found that a change in handwriting in cases where the affected part is the writing limb (right in the majority of cases), the handwriting can be a very good objective test in the detection of changes in ability. Since in cerebrovascular accidents, almost half of the patients would be affected in the writing limb, and of these a good proportion would be able to move the limb to a certain extent to attempt writing, and also with the general increase in educational level, the number of patients able to write will become more and more, this use of handwriting can become a test of some importance.

Stellate block compared with control and intravenous papaverine in the treatment of hemiplegia due to cerebrovascular disease in the earlier stage have been previously reported by us as showing some benefit with stellate ganglion block (Gwee, 1956, 1960). The benefit we noted has been of 2 types; firstly, an immediate benefit seen in a proportion of cases which was detectable immediatly after the injection; and secondly, a long term benefit in that the number of patients ambulant seemed to be more when a cut off point of 1 month was taken in the time of treatment. It has been found also that this immediate benefit was not seen with control cases and uncommonly in those on papaverine, and was significant in cases receiving stellate ganglion block only. Since then, there has been a good number of publications, most of which showing that stellate ganglion block did not affect the cerebral blood flow in any way, and 2 clinical trials have been reported (Milikan, 1960; Carter, 1960) where it was shown that when compared with control cases, no clinical benefit was evident. However, nothing has been mentioned about the immediate benefit that seems to have happened to cases of stellate ganglion block reported by us. It was possible that neither of the 2 workers noted the same phenomenon. 2 cases are now reported using handwriting as an objective test to show this phenomenon of immediate improvement which was reported by us.

CASE REPORT

Case 1

Male patient aged 30 with the history of sudden onset of headache, vomiting and weakness of the right side of the body in September 1958. He was treated at home by his general practitioner for 5 days, and the headache improved but the weakness persisted, and so he was sent to the hospital. At entry, he was conscious and showed signs of right hemiparesis with marked disturbance in the ability of writing, but was ambulant without assistance, and had no speech defect. A lumbar puncture showed some xanthochromia with increase of protein, but no frank blood. On the following day he was given stellate ganglion block and showed an immediate improvement in the power of his limbs as well as in handwriting (Fig. 1). His recovery in skill was maintained and after a few days he was discharged, and has remained well since. He refused however further investigations in the way of arteriograms, and for the last 12 years, he has remained well.

Case 2

Male patient aged 56 in April 1970 woke up with feeling of weakness in the right side and difficulty in speaking, and after a day was sent to the hospital. At entry, he was found to be normotensive with right hemiparesis and some slurring dysarthria but no clear cut aphasia. There was no gross cranial nerve disturbance, and the Babinski was upgoing on the right side. He showed very marked handwriting disturbance. Lumbar puncture showed increase of protein but no xanthochromia and no increase of cells. A diagnosis of

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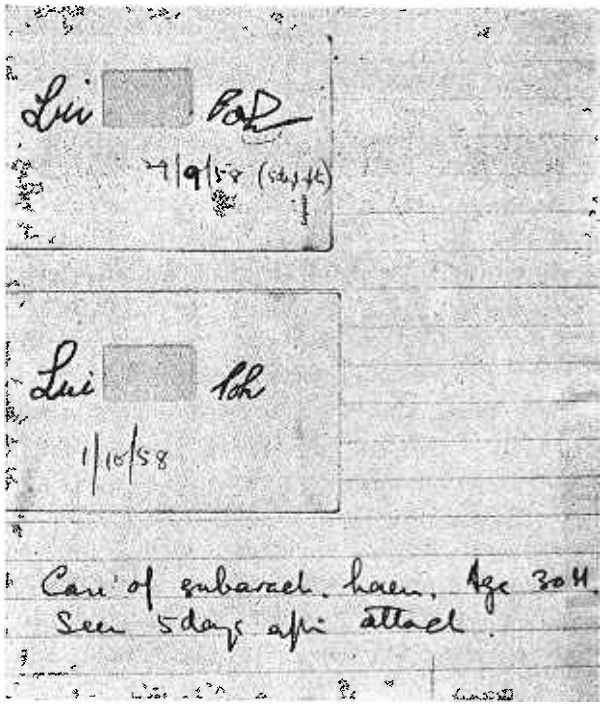

Fig. 1.

cerebral thrombosis was made, and he was treated conservatively. At the end of the third day, he made no apparent improvement, and it was decided to give him a stellate ganglion block. His handwriting skill was noted immediately before the injection, and upon the completion of the block, he felt subjectively better, his limbs was stronger but still within the power of Grade 4 but his handwriting showed considerable improvement. The next day, as the handwriting was still not quite normal, although he was speaking well and walking about, and his power was rated as Grade 4+, he was given another stellate ganglion block, and again immediately on completion of the ganglion block, his handwriting showed further marked improvement, although on the point scoring system, it was difficult to say that his power had improved (Fig. 2). Since then, he remains well and his handwriting skill remains satisfactory. He too had refused consent for further investigation in the way of arteriograms.

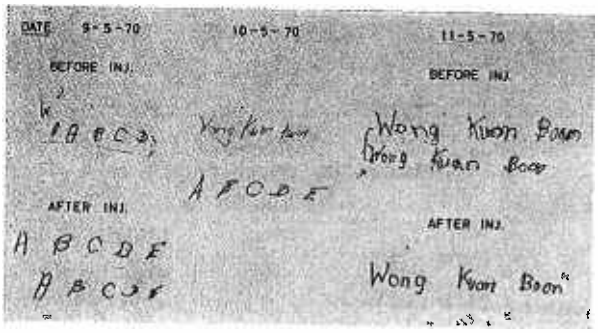

Fig. 2.

Handwriting in these 2 cases showed very marked change, although on normal point scoring system the doubt would have remained whether the patient had improved or not. It is contended therefore that for a more sensitive and objective assessment, handwriting is much more valuable as a test in patients who are able to write and who are affected by cerebrovascular accidents resulting in rightsided weakness. Stellate block has received adverse comments since the use of cerebral blood flow to correlate with benefit in the therapy of cerebrovascular diseases, and cases receiving stellate ganglion block were shown to have no change in the cerebral blood flow. However, improvement in clinical status in the patient is not entirely in line with changes in cerebral blood flow, and in fact in many cases, where the cerebral blood flow remained static, the patient nevertheless improved. Besides the fact that changes in cerebral blood flow does not reflect accurately the changes in clinical status, it is quite possible that the clinical status is affected more by internal regional readjustment of blood flow than by a total change of cerebral blood flow and no serious study has been done in this direction. The 2 clinical trials that are best known namely by Milikan and Carter regarding the lack of benefit of stellate ganglion block were based on assessment techniques which were not sensitive, and they made no mention of the phenomenon of immediate improvement noted by us. Using handwriting as a test, this immediate benefit is clearly demonstrable. It may be argued that our 2 cases were either suffering from psychosomatic disability or transient ischaemic states where such immediate improvement may be expected. However, psychosomatic disturbances are unlikely to be misdiagnosed by anyone interested in cerebrovascular disease, and in any case in our previous studies using control cases and I.V. papaverine, we did not notice similar changes in the other cases, whereas if this had been due to a lack of discriminative ability to pick up psychosomatic cases, one would expect similar events to happen in the other cases. Transient ischaemic attacks are normally accepted as changes that revert within 24 hours at the latest. However, in our second case, the time and the residual hemiparesis would argue strongly against a transient ischaemic attack. In the first case, although the recovery appeared to be complete, but the patient had evidence of a bleed into the subarachnoid space, and also a protracted period of disability lasting more than 5 days, and hence would be most unlikely to be a case

of transient ischaemic attacks. Furthermore, the absence of further attacks in both cases, and the age of the first case, were both arguments against transient ischaemic attacks. It is our belief that stellate ganglion block does produce immediate benefit in some cerebrovascular disease as can be shown in the 2 cases here reported and the immediate benefit noticeable is both striking and demonstrable using handwriting skill as a test.

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