Cure of Tremulous Writer’s Cramp by Stereotaxic Thalamotomy*  
Case Report  

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From the clinical point of view, writer’s cramp consists of severe difficulty in the continuation of writing with a pen or a pencil. The onset of writer’s cramp may be either sudden or gradual, coming on over a period of years. The difficulty in writing is produced by a spasm of the fingers which hold the writing instrument or by spasm of the entire hand. The forearm, the upper arm, and even the scapulohumeral articulation may be involved in the spasm.

Several clinical forms of the disturbance have been recognized,5,4,6 and have been classified according to the frequency and character of the associated tremor. These forms of writer’s cramp point to an organic pathogenesis; nonetheless, a number of authors have suggested a psychogenic origin. Since some patients develop a full-blown parkinsonian syndrome over a period of years, writer’s cramp has also been thought to represent a forme fruste of parkinsonism.3,2,4 In most cases, however, the writing difficulty persists as the only manifestation of disease.

In the past, the treatment of this disorder has been conservative, with only rare exceptions. Psychotherapy and anti-parkinsonian drugs have been tried without much success. We are presenting a case of the tremulous type of writer’s cramp treated by stereotaxic electrocoagulation in the nucleus ventralis lateralis of the thalamus. The success of this operative treatment leads us to regard writer’s cramp from a new point of view.

Case Report

This 60-year-old man was admitted to the Neurosurgical Clinic of Zürich because of progressively severe difficulty in writing of 4 years’ duration. A fine tremor of the hands was sometimes present during certain voluntary movements. The tremor was most pronounced during writing, when it was quite persistent and severe. The patient was absolutely incapable of writing a single word. Drawing was possible, but even persistent effort produced very poor results. A diagonal tremor was evident as soon as the patient began to draw (Fig. 1).

Examination. There was a fine intention tremor of both hands during movements done on command. The fine movements of the fingers were slowed, and slight dysdiadochokinesia was present, more pronounced on the right. Other stigmata of Parkinson’s syndrome, such as rigidity, resting tremor, neurovegetative disturbances, speech and gait difficulties, were entirely absent.

A battery of somatosensory and motor tests was carried out. Tactile point-localization thresholds of the hand and sensitivity to punctate pressure of the cheek, thumb, index finger, hand, and foot were assessed before operation, and at 4 days and 3 months postoperatively. In addition, ballistic and finger-tapping performance were measured both before and 3 months after operation.

Operation. Under local anesthesia, the Riechert stereotaxic apparatus was fixed to the patient’s skull. The target area in the nucleus ventralis oralis posterior (ventralis lateralis) was located with the aid of pneumoecephalography.

At this point, a microelectrode study of thalamic unit activity was carried out. Details of this technique have been described elsewhere.5 First, the electrode cannula was inserted into the thalamus, and correct positioning of its tip was verified radiographically. Then a stainless steel microelectrode was introduced through the cannula into the ventrolateral thalamus. Unit activity, EMG in all four extremities, and marker

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pulse were recorded simultaneously on EEG paper and photographic film. Various active and passive movements of the extremities were carried out. The relationship between movements and unit activity was examined. Of four cells studied in detail, one cell was activated during active flexion-extension of the contralateral (right) wrist (Fig. 2 A),

![Image]

**Fig. 1.** The writing and drawing of the patient before, during, and after the operation. Note the striking and persistent postoperative improvement in writing and drawing.

![Image]

**Fig. 2.** The relation of thalamic unit activity to active flexion-extension of the contralateral wrist. A and B are two different neurons in nucleus V.o.p.; four responses are shown for each cell. In each recording, top line is flexor EMG, middle line is extensor EMG, and unit activity is on the bottom. Calibration: 1 second. Artifact from test stimulus is seen just before each response. In A, note increase of unit activity at beginning and/or at end of response (indicated by dots). In B, note decrease of unit activity during response (indicated by dots).