Writer's Cramp—A Rational Approach to Treatment?

By ELLIS BINDMAN and R. W. TIBBETTS

The history of writer's cramp is reviewed, and the study of ten cases described. Nine of the patients were male with obsessional personalities, and involved in a conflict with some bearing on the act of writing. Treatment by psychotherapy and re-education produced either temporary or little improvement; biofeedback, used in six cases, produced some benefit in four, of which only one relapsed. Although no statistical weight can be attached to the results of so short a series, biofeedback appears to offer a promise of response which merits further investigation. The use of the electromyograph is discussed also as a means of discriminating between tension and tremor in such cases, with particular reference to their psychosomatic meaning.

Introduction

Writer's cramp, also known as craft palsy or craft neurosis, can be described as a muscular spasm of the fingers and hand of the writing arm, often spreading to muscles of the lower and upper arm, and even to the shoulder girdle with consequent incoordination and discomfort, leading to weakness, pain, and often tremor. The cramp occurs only when writing or during some similar activity such as typing or counting notes. The pen is grasped more and more firmly and the writing becomes more jerky and forcible, until the pen may be pushed through the paper and writing eventually becomes impossible. Distortion of the writing position occurs, with the hand supinated or over-pronated, sometimes with the pen grasped between the middle and ring fingers.

History

The first descriptions in medical literature were by Bruck (1831) and Bell (1830); they attributed the condition to the advent of the steel nib, which was superseding the quill pen, but apparently it is mentioned in ancient Chinese literature as prevalent among brush writers. The subsequent literature shows a multiplicity of approaches which underline the intractability of the condition.

It has been reviewed extensively by Crisp and Moldofsky (1965), who have also produced the study of greatest depth so far in this country. They describe seven patients who were treated by general relaxation, exercises, correction of abnormal writing posture and re-education of handwriting by using a soft nib, beginning with large writing and then decreasing. Treatment was also by formal psychotherapy, which was monitored with the techniques of self-assessment and repertory grid. Most valuably, Crisp and Moldofsky go on to work out a very convincing psychosomatic rationale. They point out that the upper limbs are associated developmentally first with grasping, clinging, holding and then rejecting, and also with the expression of emotional states, so that the upper limb becomes a major organ of the expression of anger at the non-verbal musculo-skeletal level. This has been demonstrated by the electromyographic studies of Malmo and Smith (1956), which indicated that muscle tension in anger is confined to the upper limb, and also by Shagass and Malmo (1954), who found that this varied quantitatively between subjects.

It is against this background that motor skills develop, and handwriting is of course the one with which this study is concerned. One may see this as requiring initially a great deal of atten-
tion to the posture and to the learning and execution of the work of writing. Ultimately this becomes automatic, and like other automatic skills is dependent for its adequate execution on the relaxation of antagonist musculature, being consequently upset by any rise in the general level of muscle tension in the upper limb.

Present Study

Our own study comprises ten cases; only one of these patients is a woman. The preponderance of male patients corresponds with the findings in the other series (see Table I).

The age of onset ranged from 27 to 57 years, the duration of symptoms before presentation from six months to 19 years, around the median of 2 years. As the material was largely retrospective, no formal personality studies were done, but clinically all the men were obsessional. They were meticulous, orderly, uneasy of change and unable to accept with facility ideas of conflict with their sense of duty or propriety. This tended to show in their occupations; two were clerks, one a draughtsman, two bank managers, three works managers, one a college lecturer, and only one, a window cleaner, was an unskilled worker.

While the psychodynamics were not invariably obvious, in several cases they presented clearly as a conflict, unresolved and unacceptable in the obsessional subject, and associated with the writing situation. One example is the bank clerk (4) who functioned as such very well—the routine fitted in with his obsessiveness. In fact he functioned so well that he was promoted, as so often happens, to a position where his skills were less required. He became assistant manager and immediately encountered difficulty with the more subtle and personal decisions required. It was in the course of writing reports on this work that the disability began.

As to treatment, this began as an exercise in psychotherapy. An attempt was made in each case to obtain a positive relationship and on this basis to allow the development of insight, in the hope that this would generate sufficient relaxation to be effective. As one would expect with obsessional personalities in general and motor disorders in particular, this was not completely effective. Re-educative techniques were added and in the first case were completely effective. This was the window cleaner (1), whose condition began in 1940 when he had to sign his name on enlisting in the Army. He was in considerable conflict at the time; on the one level his patriotic duty made him volunteer, on the other he was anxious, for more materialistic reasons, to remain in civil life. This lit up a parallel conflict of guilt in the relationship with his parents, to whom he felt he owed duty but no affection. He made slight improvement with this insight, but more was required and an attempt was made to modify his writing. It was found that the disturbance was restricted to cursive and did not occur if he printed block capitals. Accordingly he was asked to write each letter separately, and this worked. His handwriting developed from this fresh start completely normally.

Subsequent experience was less encouraging. Two patients (2), (3), regained writing capacity if they wrote very large, or if they drew figures instead of writing words. Re-education was therefore attempted by beginning with large letters and gradually reducing them, and by beginning with drawing shapes leading to letters and then handwriting. In both cases the response was poor; muscle spasm occurred as soon as the normal writing situation was reached. If one reflects on the different responses one recalls that the first patient’s disability began when he had to sign his name in front of a recruiting sergeant. As a window cleaner, not particularly literate, most of his writing was done in front of other people, as in signing-in at his club. While most people with writer’s cramp are embarrassed by their disability and are consequently worse when others are watching, it may be that this patient’s disorder is primarily a social phobia, with writer’s cramp a secondary elaboration. This may be the reason why it responded to re-education, perhaps as a form of desensitization.

With further experience, it became apparent that relationship, insight, hypnosis, re-education and desensitization all seemed capable to a limited extent and in certain circumstances of producing relaxation to a therapeutic level, but it was never enough or of sufficient duration to be worthwhile. One of the difficulties seemed
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Results: 1. Symptom free; 2. Improvement sufficient to produce little or no disability at work; 3. Improvement but still some work disability; 4. No change.

Obsessivity: 1. Sufficient only for adequate function; 2. More than necessary for adequate function, but insufficient to impair efficiency seriously; 3. Intense enough to disturb function at home and work.
to be that the muscle contraction was largely unconscious until it reached the level of painful spasm, with disturbance of writing and of posture. By this time the chain of events was no longer easily reversible; anxiety merely led to greater muscle tension. Some means of alerting the patient to muscle tension before this stage seemed therefore to be worth a trial. Attention was accordingly turned to biofeedback. This was begun with the electromyograph in an attempt to quantify the data. Surface electrodes were fastened to the skin over the tendons of the flexors to the index and thumb on the palmar surface of the hand; the patient’s attention was then directed to the increase in intensity of sound as he contracted these muscles and, more importantly, to their diminution as he relaxed. He was then asked to write, while attempting to keep the sound down to a minimum.

Biofeedback has been defined as the use of an electronic instrument to monitor a physiological function by visual or tone variable to give a degree of voluntary control greater than could be done without this assistance. As is well known (Green, 1970), it can be used to influence dramatically the blood pressure, the EEG and the blood flow. It has been stressed that the operation is entirely a voluntary one. Motivation is, therefore, mandatory for success, and this must have a profound influence on its therapeutic use.

The treatment was tried with six patients. At first it was used as a form of aversive therapy with the amplification tuned until the sound was at almost intolerable intensity when the hand was in spasm. It was found that this simply increased tension and made the spasm worse. The next step was to keep the sound at a tolerable level even with spasm, instructing the patient to reduce it to as near nil as he could manage. This we found meant an amplification of 200 micro volts. With the first patient (6), who was a clerk, the effect was immediately good, and after six treatments at intervals of a week he was writing for long periods without spasm and without pain. Unfortunately, after a period he regressed, though not to his previous poor level of function. With the second patient (7) response was poor; this was the draughtsman, who had been an in-patient with a depressive illness. Not unexpectedly, his motivation was low indeed, and biofeedback had no effect whatsoever. When his depression cleared the writer’s cramp improved very considerably, so there was no opportunity for a second chance. The next attempt, with a highly obsessional bank manager (5) of 61, was also unsuccessful. Although his motivation seemed good he was unable to relax any more with biofeedback, and his personality was not sufficiently flexible for him to persist and succeed after being conditioned to failure. Happily, the next three cases (9), (8), (10), were much more successful. The works manager (9) and the other clerk (8) obtained rapid alleviation of their symptoms with four or five sessions. We found that it was important to keep constant vigilance in the first stages of treatment. It was common for the patient to become rapidly tolerant of the higher intensity of sound and his attention had to be called to it almost every line. This fits with the theoretical concept of biofeedback as mainly a medium for instruction in the well motivated patient. The third patient (10) to improve dramatically was the lecturer, the only woman in the series. She differed in other ways from the majority of the patients. She did not have a particularly obsessional personality, in fact she was rather flexible and easy going, not meticulously tidy, and able to cope with ambivalence or hostility. The psychogenesis was also rather dubious. There had been some friction with a difficult colleague, and a student who was living as her foster son was beginning to mature and lead an independent life. She would, however, not admit to being particularly stressed by either situation and displayed a good-humoured, extravert, ebullience. The symptomatology was rather different in that the condition began with spasms of the shoulder whilst writing, leaving the hand relatively unaffected until later. It may well be that this condition was of hysterical rather than obsessional origin, and that this was in fact a conversion syndrome. There may also have been some secondary gain in the attention of her friends and colleagues, and in reduction of her teaching load. It was found with another patient, whose
treatment began subsequent to this series, that even when he relaxed there was still a great deal of noise emission and it was noticed that this was associated with a good deal of tremor showing up as waves of much higher amplitude than those generated by spasm on the oscilloscope. We discovered that, by leading from the flexor muscles near the elbow, tremor disturbance was eliminated and only spasm showed up. This made the instrument much more sensitive to the onset of cramp, and the results have since seemed more promising. The next step may be to take the system out of the laboratory and into the working situation. This would require electrodes attached to the amplifier, which could be worn unobtrusively. The signals could be picked up by a telereceptor on the subject's desk and this would allow for constant monitoring by biofeedback throughout the patient's working day for as long as might be necessary to produce results.

Follow-up

The earliest patient, the window cleaner (i), could not be contacted but had been well six months after treatment began. The bank manager (s), who had incidentally turned rather discouragingly to acupuncture, was still no better, with a five-year history of complaint. The clerk (6), who was our first subject to biofeedback, had improved enough to have no problems at work five years after onset and one year after treatment. The company director (2) after five years was still unimproved, but had compromised by using his left hand. The draughtsman (v), who had been depressed, had lost his depression and the writer's cramp had correspondingly improved eighteen months after onset. The bank clerk (@), seven years after onset, was coping with his job as a submanager and had adjusted to the difficulty by using other fingers of the hand to write. One works manager (s), a year after treatment and eighteen months after onset, had not improved but used a different posture to write fairly effectively. Three others (8), (g), (io), who had responded successfully to biofeedback were still well three months after treatment, but the woman lecturer (10) had suffered a relapse within twelve months.

Discussion

Writer's cramp is a comparatively rare condition, notoriously difficult to treat. It has affinities with craft palsies such as blepharospasm and the tremor or spasm which seizes musicians and games players during their performance. There are also similarities with stammering, where the neuromuscular mechanism fails in speech but not in other functions. It appears from this study that there are broadly three varieties:

1. The classical writer's cramp which arises as a result of conflict in an obsessional subject. The contribution of obsessionality appears to be in the tendency to self-reinforcement after initial failure.

2. The type which begins as a social phobia, often in the less obsessional subject, and is therefore probably more amenable to treatment.

3. More rarely, the condition in an immature non-obsessional subject which could perhaps be described as hysterical dysgraphia and is more close to the conversion syndrome.

Psychotherapy does not seem to be particularly rewarding, and this applies also to other previous techniques of a more direct and reeducative type.

The first results of biofeedback suggest that its trial is worth continuing for further assessment at least. The method has been used in other muscular disorders, such as spasmodic torticollis, with some success (Brudny, 1974). It was observed in one subject that during a tense and trying period at work his performance under biofeedback was much less satisfactory but was associated with increased tremor and not spasm. It is possible that the two components of tremor and spasm are psychologically determined in different ways; it may be that spasm is more the expression of restrained aggression, while tremor is more the result of anxiety. If this is so it might be worthwhile to use the oscilloscope to separate and assess each component, and this might be of help in the understanding of the individual psychodynamics and possibly allow a more insightful approach to treatment.
References


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