TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some diseases of the nervous system met with in general practice.

THE POST-ENCEPHALITIC PARKINSONIAN

BY

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Before discussing the details of such lines of treatment as are known to afford relief it is well to be clear as to exactly what it is that calls for treatment. The unknown poison that causes chronic encephalitis may involve almost any part of the central nervous system, with an especial predilection for the intracranial rather than the spinal portion. Moreover, the extent to which different parts of the higher centres may be affected varies widely in different cases. In some, somatic disability (the Parkinsonian syndrome) predominates, while psychical (mental or moral) changes are slight or perhaps absent. In others it is the reverse. Sometimes both mind and body are seriously affected. A second point of importance concerns not only the particular form but also the distribution of the Parkinsonian syndrome. Muscular rigidity with slowness of movement may be present without tremor, or both may be present together, or tremor may predominate from the first; and any of such combinations may be unilateral, or bilateral, or almost universal in distribution. Sometimes the legs are affected early and severely; in others they are hardly affected at all. Thirdly, whether treated or untreated, some patients go rapidly from bad to worse, while in others the disability remains slight and almost stationary for years together.

In this article the treatment of the mental and moral changes will not be dealt with in detail. Speaking generally, they most often call for that kind of organized care and occupation which in many instances can only be satisfactorily obtained at special institutions adapted for the purpose. Such do exist and serve a useful purpose, and there might well be more with special provision for this type of case.

Increased Muscular Tone

It is in relief of the common symptom of increased muscular tone that treatment has so far been most successful. The slowness or poverty of movement to which the disease gives rise can in most cases, and to a certain extent, be made less by the action of one particular group of alkaloids—the atropine series.

The three members of the group which are most commonly used are atropine, hyoscine, and stramonium (arranged in alphabetical order). Each of these has its advantages and its drawbacks. Each, if prescribed in sufficiently large doses, is capable in certain cases of producing immediate effects as dramatic in character as any seen in medicine. Moreover, these effects can be maintained for long periods provided the treatment is continued. Each has its advocates, and it is quite natural that, having succeeded with one of the three, a practitioner gets to know how best to employ this particular drug and hesitates to make use of the other two. As a matter of fact, there are patients in whom some one of the three seems to act more effectively than either of the other two. Why this should be so is as yet unexplained; indeed, the pharmacological action of the

atropine series in relieving the muscular rigidity of the Parkinsonian has not yet been worked out. Nor will such working out be an easy matter. The Parkinsonian has as a rule an abnormal mentality, and the available means of measuring accurately any change in his condition as the result of treatment cannot be carried out without his full knowledge and co-operation. A slight modification in the method of administering the same dose of the same drug may produce a psychical reaction which quite masks its effect.

During recent years a method of treatment by atropine, which was originally advocated by Kleemann¹ in Germany, has been widely adopted in various countries; the following is a short account of the method.

Kleemann Method of High Dosage of Atropine

The idea of this form of treatment was obtained from Bremer's observations on the unusual tolerance of Parkinsonians for atropine (*Arch. f. klin. Med.*, 1925, cxlix, 340). This treatment was carried out by Kleemann¹ on thirty-seven cases at an institute, and was supplemented by baths, massage, exercises, etc. The method consists in ascertaining the *maximal dose of atropine* that causes improvement. This is found by a daily graduated increase of dose. When such increase yields no further benefit the dose is similarly decreased day by day until the return of the symptoms shows that the dose is too small. A dose slightly higher than this is then chosen as the *optimal dose* for that patient, and it is continued at that amount daily.

The patient should be in bed during the estimation of the optimal dose. A solution of atropine sulphate in distilled water (1/4 or 1/2 per cent.) is used. The necessary dose can be measured by a pipette or syringe, and, suitably diluted, is given by mouth.

First Day.—Begin with the total daily amount of 1/2 mg. (0.5 mg.) of atropine, given by mouth in two equal doses—that is, 1/4 mg. morning and evening.

Second Day.—Increase by 1/2 mg. atropine, spreading it over three doses—1/4 mg. morning, 1/2 mg. afternoon, and 1/4 mg. evening.

Third Day.—Increase by 1/2 mg.—1/2 mg. morning, 1/2 mg. afternoon, 1/2 mg. evening. Continue at the same rate of daily increase so long as any objective or subjective improvement is produced.*

Maximal Dose.—When a dose is reached at which no further improvement ensues, keep on at this maximal dose for a few days, then reduce the dose by 0.25 mg. until a point is reached at which objective or subjective symptoms return. A slightly higher dose than this is considered to be the optimal dose, and is then given daily in the form of pills made to this strength for this patient. The patient is then allowed to go about and take one of these regularly three times a day.

While estimating the optimal dose it was found that, although the omission of a single dose for any cause was not of importance, when the doses were reached a break in the treatment of any length—as, for instance, if vomiting occurred—gave rise to unpleasant symptoms. In such circumstances a dose of two-thirds the amount taken by mouth was injected subcutaneously until vomiting ceased. In mild cases the optimal dose is usually

* Professor Wayne informs me that in his experience of treating cases by high atropine dosage at the Sheffield Royal Infirmary the dose may be increased much more rapidly.

from 3 to 7 mg. of atropine daily. In severe cases it varied from about 12 mg. to 24 mg. of atropine daily (in one case). The maximal dose in any of the cases was 26 mg. of atropine in a day.

Toxic Effects.—The temporary paralysis of accommodation can be met, if necessary, by suitable glasses. Excessive dryness of the mouth is not a contraindication, and tends to disappear with increasing doses. If vertigo, flushings, palpitation, and stomach symptoms are complained of, continue with the same dose for a few days. The symptoms usually cease and the daily increase can be renewed.

During recent months I have had the opportunity of seeing a certain number of patients treated by this method. Whilst a full account of these will be forthcoming when the series of cases is completed, it may be said now that in many cases, even the most severe, quite marked improvement does take place. Speech, which for some time has been almost an inaudible whisper, becomes easily heard. General movements of the body and limbs become more free, and in some instances patients who had been almost totally dependent become almost independent. In the cases with troublesome sialorrhoea the relief secured is usually considerable. The frequent oculogyric attacks in some patients have been reduced in number and duration. The subjective sense of well-being brought about by the treatment itself reacts on the mentality of the patient, thereby leading to further effort. In some cases there has also been improvement in the tremor. On the other hand these favourable results are not constantly attained. The reasons for this are somewhat obscure, and probably vary in different cases.

While Kleemann's method of administering atropine may be carried out in all cases, it seems hardly necessary for many milder ambulant patients: a much smaller dose of atropine, prescribed as tincture of belladonna, is sufficient to keep them comfortable for years. The term "smaller dose" is only relative. Judged by the *Pharmacopoeia's* standard the doses are high. Thus many of my patients take three drachms a day, or even more.

Hyoscine (Scopolamine) and Stramonium

Hyoscine was formerly supposed to be another isomer of atropine, but actually it is slightly different chemically and has a pronounced depressant effect on the higher centres. It may be administered hypodermically or by mouth. The latter is obviously more convenient in patients who are going about. Larger doses (1/50 grain or more) than those stated in the *Pharmacopoeia* can be tolerated.

Stramonium, like the other two members of the group, has a powerful action in relaxing the increased muscle tone, with great relief to the Parkinsonian. It may be prescribed either in the form of the tincture in doses from 10 minims up to a drachm or more three times daily. Hurst (*Lancet*, 1934, i, 499) finds the addition of pilocarpine nitrate (1/10 grain or more) useful if dryness of the mouth is troublesome. In some cases of Parkinsonism the checking of salivation is an advantage. Another form of administration is as a pill containing the dried extract. Here again the dose necessary to be effective in most cases is considerably higher (1 to 2 grains or more) than the maximal dose of the *Pharmacopoeia*, and it can be continued for an indefinite period.

In making use of any of these three drugs in the treatment of Parkinsonism the general principles laid down for the Kleemann method may well be adopted at the first—namely, to ascertain the optimal dose for the individual by careful experiment rather than to begin with large doses, which is not without risk of unpleasant effects.

Tremor

When post-encephalitic Parkinsonism first appeared tremor was not a predominant or even a common feature. Sooner or later, however, it is observed in most cases, and when marked is the symptom for which relief is most urgently sought. Unfortunately such relief is very difficult to give. As mentioned above, improvement has in some cases followed high atropine dosage. Surgical measures in the form of removal of the lower cervical sympathetic ganglion have been advocated in cases in which the tremor is limited to, or particularly troublesome in, one arm. In one patient in whom this procedure was adopted the tremor of the arm continued as before.

General Treatment

While much relief may be and is obtained by one or other of these drugs, all those familiar with large numbers of these patients realize the importance of environment. The greatest asset that a Parkinsonian can have is a good home with a sensible and sympathetic parent or spouse to guide and help him. Next to that the life of a well-ordered suitable institution is probably the best. In the milder cases constant daily encouragement and help should be given towards the carrying on of life and the keeping up of interests in every way possible. In well-organized institutions baths, massage, games, and light occupations play an important part from the psychotherapeutic point of view. In private life also definitely regulated amusements, exercise, and occupations are of service.

From time to time zealous enthusiasts, carried away by the real but temporary improvement so characteristic of this chronic disease, deceive themselves and raise false hopes in others that an infallible cure has been found in some particular line of treatment. Such hopes are at present without foundation. There are a few cases of post-encephalitic Parkinsonism which show no signs of getting worse as the years go by, and a still smaller number in whom such few early symptoms as there were have become less marked, but there is no evidence that any form of treatment as yet known can remove it altogether or even check its natural rate of progress.

REFERENCE

¹ Kleemann, Anna: *Deut. Zeit. f. Nervenheilk.*, 1929, cxi, 299.

A. L. Hurez (*Thèse de Paris*, 1935, No. 551) records his observations on 244 cases of enteric fever in children which occurred in Lesné's service at the Hôpital Trousseau, Paris, from 1920 to 1934. Typhoid fever accounted for 162, sixty-two were due to paratyphoid B, and two to paratyphoid A, while in eighteen the variety of enteric was not determined. In 242 cases the ages were as follows: under 2 years of age two, between 2 and 5 years twenty-seven, between 5 and 10 seventy, and between 10 and 15, 143 cases. In 40 per cent. of the cases the onset was sudden, simulating influenza, pneumonia, tonsillitis, acute peritonitis, appendicitis, or acute meningitis. High temperature was the most constant symptom, and was almost always well borne. A typhoid state was inconstant and often slight. Dissociation of the pulse and temperature was not the rule, and dicrotism was very rare, except among the older children. The intestinal symptoms were almost always attenuated, meteorism was usually very slight or absent, and constipation and normal stools were as frequent as diarrhoea. Rose spots were seldom absent, and were frequently profuse. Enlargement of the spleen was the most constant sign. Pulmonary manifestations were almost always present. Nervous signs were rare and not pronounced. Albuminuria was exceptional. Loss of flesh was frequent from the onset of the disease. Enteric fever in the child is often of short duration, but relapses are frequent. Severe complications were rare. The mortality was 9.4 per cent.