ROUTINE TREATMENT OF EPILEPSY.*

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IN this hospital we have a routine differential diagnosis which is applied in all cases of suspected epilepsy and which is as follows:

(*a*) High blood-pressure.
(*b*) Trauma of vessels and angiospasm.
(*c*) Nephritis, subacute and chronic.
(*d*) Diabetes.
(*e*) Tabes dorsalis, tabo-paresis, neuro-syphilis and general paralysis.
(*f*) Hysteria.
(*g*) Epilepsy.

The elimination of most of these causal factors of epileptiform seizures is readily obtained by the ordinary examination made in every case for blood-pressure alteration and the presence of abnormalities in the urine. Nothing but careful observation will decide whether hysteria or actual epilepsy is present.

Where all except post-syphilitic forms and the epilepsies are negatived the case is further simplified, for our practice is to obtain the Wassermann reaction of the blood of all new admissions and, on the slightest indication, to follow this up by a full examination of the cerebro-spinal fluid.

This routine is justified by the number of patients who are found to be suffering from the effects of syphilis on the nervous system, in the form of seizures readily comparable to the epilepsies.

When syphilis has been entirely negatived and the other points of the differential diagnosis cleared up, one feels able to give a diagnosis of true epilepsy.

Having decided on the disease, there are two further duties to perform before full treatment can be applied, viz.:

(*a*) To look for the cause.
(*b*) To classify the epilepsy.

Our working classification seems to answer fairly well; it is by

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no means hard and fast, but it is useful for the early treatment of admitted cases. We divide the major epilepsy cases into—

(1) Traumatic.
(2) Toxic.
(3) Habit, or psychological.
(4) Physiological.
(5) Idiopathic.

At the best this is a rudimentary method of labelling the case, for it is obvious that the psychological factor may enter into every case, just as the toxic and idiopathic factors may be one and the same, and may be found in the same case. Accepting the classification as being useful, however, the division gives some indication for the lines of treatment.

Where possible treatment is undertaken from two aspects, the general and the specific.

General Treatment.

General treatment is applied to all cases, and consists of thorough investigation of the bodily functions, always with the endeavour to restore the various systems to correct functioning. Particular attention is paid to the eliminatory organs; focal sepsis is remedied as far as possible, and the mouth is kept clean by extractions and dental toilet. Crowned teeth are a frequent source of septic entry and are a positive danger to the epileptic.

Errors of refraction are corrected where possible, and an attempt is made to clear up sinus trouble.

Our first care is to restore the alimentary tract to a clean condition, regular elimination is encouraged and constipation avoided. It is no uncommon thing to find a diarrhœa due to constipation prior to an increased fit incidence. Colon lavage has been attended with some temporary betterment, but is most difficult to carry out with some epileptics.

Purges are used somewhat freely, but by no means in an indiscriminate fashion; they are selected with care, for many epileptic patients react in remarkable fashion to a suitable aperient. Castor oil in generous dose cuts short cyclic fits in a considerable number of cases, and if the consequent evacuation is of constipated appearance an olive-oil enema is given.

Calomel in doses of gr. v, followed by a saline, is very efficacious where there is superimposed "habit" epilepsy.

We avoid wherever possible the standard "white mixture," because it has a tendency to cause dehydration and the ultimate retention of chlorides, with an increased susceptibility to attack.

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Diet plays a large part in the treatment of almost all our patients, and it is obvious that where constant heavy meals are permitted the fit incidence is increased. It seems better to keep epileptics on a generous diet of easily assimilated food and to reduce the meat ration, replacing it to some extent by milk. A well-fed epileptic is amenable, but an over-fed epileptic is readily truculent, or has more fits than usual.

In any condition of recurrent fits of a severe nature, the diet is reduced to milk for a short period to allow the alimentary tract a fair opportunity to re-assert its excretory function.

Examination of the urine is carried out frequently, and where there is a great excess of chlorides it seems reasonable to reduce the salt intake, which can readily be done.

One factor emerges from the examination of the urine and fæces and is common to both: after a series of fits it is quite common to obtain *B. coli* in large numbers.

Specific Treatment.

Actually there is no specific treatment for the epilepsies; those labelled "specific" are often "shots in the dark." Working on the foregoing classification, however, one bases treatment on the label put upon the cause of the disease.

Traumatic epilepsy.—This is, perhaps, the only condition which has anything in the nature of a specific treatment. If the causal factor is early recognized there is quite a good chance of radical surgical cure. Immediate attention is essential in traumatic cases; usually the causal depression needs interference long before seizures appear; when epileptiform attacks are found it is an indication that some organic damage has been done. One is forced to the conclusion that some cases showing negative X-ray results have really some bone lesion, not macroscopic, yet large enough to cause either degeneration or congestion favouring epilepsy. Possibly the cortical cells in the area of the depression undergo minor degenerations and liberate cell toxins, which remain in the lymphatics until the congestion and subsequent deflation of a fit is sufficient to release them.

Lumbar puncture has been practised elsewhere in such cases, but the result has been only a temporary relief; examination of the fluid has revealed an excess of globulin.

Luminal by the mouth helps to control the fits, but has no curative action on the causal condition.

Toxic epilepsy.—When the offending cause has been removed some improvement is looked for, but vigilance is the price of safety

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in the toxic class of case. Nothing seems to destroy the circulating toxin, and only constant attention to the usual and unusual foci of infection, together with frequent and judicious purging, keeps the accumulation of toxins below the level required for cyclic fits.

Habit, or psychological epilepsy.—Everyone knows the patient liable to have fits at any time, and from no apparent cause. Such a case, were insanity not present, could readily be regarded as hysteria with epilepsy, and treated along the Weir-Mitchell lines. As it is, the breach of conduct is so serious as to require certification, and the fit habit is a permanency. Medicine tending to reduce the fit incidence for a time, but none give lasting benefit. Except for the mental degeneration, the case seems an ideal one for psychotherapeutics.

Patient firmness, suitable doses of castor oil and minor reductions in diet are of some help.

Physiological epilepsy.—Under this label are those cases showing gross endocrine lesions, chiefly of the ovaries, thyroid and pituitary; it is only possible to indicate the symptoms which make endocrine dysfunction to be suspected. The existence of headaches prior to fits is evidently of the nature of an aura, and such a complaint on the part of some patients may lead to a diagnosis of pituitary lesion; again, some cases show goitre, and small doses of thyroid afford relief.

In the female, irregularities of menstruation associated with cyclic fits may suggest a need for ovarian medication.

Where there is evidence that the endocrines are at fault and no real indication of one offending gland, thyroid in $\frac{1}{10}$-gr. doses has been resorted to with fair results.

Idiopathic epilepsy.—Just where the toxic, the "habit" and the idiopathic epilepsies separate in the insane it is difficult to say. Into the idiopathic class are put, perforce, all cases to which a more definite label cannot be attached; perhaps all epilepsies should be so labelled.

When all the observable causes have been treated, and when all the available sites of infection have been cleared, one is driven back to the "permanent" drugs. (I do not suggest that drugs are withheld from any patient, but they are regarded as tentative measures until all possible indications have been obtained as to the causal condition.)

It would seem that epileptics, more than any other class, have idiosyncrasies for drugs; some cannot tolerate bromides, others react badly to luminal, and some react for a time to anything.

Sedatives are avoided, *per se*, as actual treatment; only in the case of nocturnal fits do we resort to sedatives as a standard practice after the ordinary drugs have been tried. Some success has been

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obtained by the giving of one or more dial tablets just before bedtime—the fits have been warded off at night, and have not occurred in the daytime to any marked extent.

Bromide and borax, with or without arsenic, are given in a few cases, but only where luminal is not well tolerated; the mixture has to be discontinued at times because of the dermic reaction.

Luminal has been successful up to a point, but there seems to be a saturation factor in each patient, and when this is reached the fits tend to revert slowly to their former number, in spite of increase, or decrease, in the amount of luminal given.

Complications with this drug are not frequent, but are at times rather startling; one patient relapses into stupor three days after the commencement of the drug in any form, or dose, whilst another promptly develops an urticarial rash.

Peptone Treatment.

In spite of treatment by diet, purges, the endocrines, bromides and luminal, the fit incidence remains at a high figure, and latterly one has felt the necessity of treating in some other way. Carmalt Jones and Edgeworth have mentioned the possibility that benefit might ensue from the use of protein therapy. The latter gave in the *British Medical Journal* (November, 1920, p. 780) results obtained in twenty cases, arrest of fits being obtained in nine.

Auld stated that non-specific protein desensitization could be induced. That is, if an animal is sensitized to multiple proteins (*e.g.*, egg-white, horse-serum and grass pollen) and then is desensitized to one (*e.g.*, egg-white), it becomes, *ipso facto*, desensitized simultaneously to the other two; that is non-specific desensitization.

Further, the bronchi of a sensitized guinea-pig, given additional protein, go into asthmatic spasm. Peptone will induce asthmatic spasm in animals, therefore possibly peptone could be used as a universal desensitizer. On this hypothesis Auld, assuming that asthma in human subjects was a manifestation of protein sensitization, used peptone for it and claimed good results.

If the asthmatic spasm is of this character, why should one not regard the other spasmodic disorders, of which the two outstanding conditions are epilepsy and migraine, in a similar light?

Skin-reactions were done some time ago, and the multiple sensitization referred to by Auld was found. For this reason, in an attempt to treat epileptics by desensitization a peptone solution is used. Thirty cases, male and female, have been or are being treated by injections of a 5% hypodermic solution of peptone (Armour), Auld's No. 2. There has been no selection of cases, and

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no application of our labelling system has been made. In the desire for results we have picked the worst cases.

There is little technique to quote beyond strict asepsis. The commencing dose has been ℥v, and this is increased for each weekly dose, rising to ℥vij the first week. The third dose is ℥x, the fourth ℥xv, and the fifth ℥xx. After this a rest is given.

The intravenous route gives rise at times to slight malaise and rigor, and is difficult to use with some patients; with either the intra-muscular or subcuticular route no deviation of temperature is found as a rule.

In only two cases has any real complication arisen, and this has taken the form of a skin-eruption closely simulating the bullæ found in scabies, but much more widespread. It appeared within twenty-four hours of the first three injections, and subsided within three days.

An increase of fits just after the injection is by no means uncommon, but may be due to the excitement of the injection.

Results are inconclusive; certainly no cures have been noted. It is a fact, however, that the excitable epileptic is, in some cases, less prone to excitement; in others, markedly in one case who has had an extensive decompression, fits are much fewer. Some patients are having no minor fits at all, where there used to be a number, and no increases of major fits has been noticed. One or two particularly stuporose patients are more amenable to discipline and get about well.

A fair summary would be that about half the patients treated have a somewhat reduced fit-incidence, in spite of the fact that their standard drug (luminal or bromide) has been cut down. In giving this opinion one is not unmindful of the fact that some patients do better on small doses of luminal than on large, and all have been carefully watched in this respect.

A point of particular interest has been that the young epileptics have reacted more fully to the peptone treatment.

In view of the existence of *B. coli* infection of the alimentary tract and of the urine points to a further method of treatment on these lines, it would be of interest to carry out treatment by a detoxicated strain of *B. coli* on the lines of the peptone treatment, except that the intravenous route might be used and a temperature reaction sought for and used to control of the dose.

Further Treatment.

Within the last few months an analogy has been drawn between asthma, angina pectoris and epilepsy, and the Vienna school is

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treating the two latter diseases as a hyper-excitability of the nerve-endings. It is claimed that some relief has been obtained by the use of the opium derivative papaverine sulphate.

This is also being used here and is given three times a day in solution, 1 gr. being the dose. It has not been in use for a sufficiently long time for one to form an estimate of its value, although it has reduced the fit-incidence in one or two cases.

It is said that the result is both immediate and lasting, and that the drug is not a "habit-former." We hope for good results from its use, more especially as luminal is readily "forgotten by the body" when discontinued.

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