

INDICATIONS FOR THE TREATMENT OF MENTAL DISEASES BY PHYSICAL METHODS.

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SINCE the work of Sakel, v. Meduna and Moniz, a large number of papers have been published on physical methods of treatment. Statistical studies of the results of these forms of treatment have been most commonly used and have demonstrated their usefulness.

In this paper we shall attempt to compare the results obtained from convulsive and insulin therapy and from leucotomy, and to study the type of symptoms amenable to these treatments, and their relation to the diseases that produce them. It has seemed to us that such a study would be able to throw some light on the inner structure of the psychoses, and on the mechanisms of action of these treatments.

We have used these methods in more than 1,500 patients since 1936, in the psychiatric clinic of the Lisbon University, in the Manicomio Bombarda, and since 1942 in the Julio de Matos Hospital. The results with the individual methods have been published elsewhere (1, 2) except those of insulin treatment, which will shortly be published in collaboration with Nunes da Costa.

This comparative study shows immediately that :

1. These methods are not specific to any special disease, but are useful in schizophrenia, manic-depressive psychosis, symptomatic psychosis, psychotic states in organic encephalography (encephalitis, G.P.I., etc.), and psychogenic and psychopathic reactions.

2. They can be used, concurrently or consecutively, in the treatment of the same psychosis as frequently happens in schizophrenia.

3. The symptoms modified by each form of treatment are very similar in the various diseases.

In our experience convulsive therapy has given useful results in—

Depressive states (with retardation, anxiety, agitation, tension and perplexity, hallucinations, and ideas of reference or delusions of enhanced significance).

Manic and excited states, ecstatic, erotic, expansive, with polymorphic, synthymic delusions and hallucinations.

Emotional lability with elation silliness and patheticism.

Dysthymia (sudden change of mood, expansive or depressive, dull and irritable, sensitive or querulous).

Delusional mood (with bewilderment, derealization, depersonalization, significative, cosmic and reference delusions).

Alteration of the vital feelings (with somatic anxiety, physical complaints, and their delusional hypochondriacal elaboration).

Akinetic (stupor) and hyperkinetic states (with expressive, reactive and primitive movements, short circuit and impulsive actions).

Psychomotor agitation (with hallucinatory or delusional basis).

Confusional and twilight states.

Paranoid states, with alteration of the whole personality, anxiety, perplexity, altered states of consciousness—slight clouding or exalted awareness of significance.

As it has already been stated, these symptoms are not specific to any particular disease entity, but may occur in almost any psychotic or psychogenic illness. The symptoms themselves are very similar in the various mental diseases, but if the quality and degree of recovery varies, it depends, as we will see later, on the evolutionary tendency of the basic process whether it be psychogenic (complex or conflict) or organic (encephalitis, G.P.I. or dementia).

These symptoms arise from positive or negative variations of psychological functions, such as awareness, attention, mood state, psychomotor activity, which in the normal state have periodic cyclical variations, with day or night, seasons, fatigue, etc.

Also the changes in thought processes mentioned are closely related with the basic instinctive, affective and attention alterations, and can be described under inhibition, disinhibition, flight of ideas and incoherence, all total alterations in the course of thought processes, capable of rapid commutations, probably dependent on a mid-brain regulation. The delusional and hallucinatory symptoms, like the changes in the thought processes, are part of total personality disturbance, and have the same character as the delusional formations of the anxious and confusional patients.

These changes in psychological functions are very frequently accompanied by changes in vegetative functions of the basal ganglia, as is shown by the frequent alterations of sleep, weight, menstruation, water metabolism, secretions and vasomotor tone, which accompany them. It is interesting to note that these types of symptoms can disappear or change under the action of strong cerebral stimuli. We have seen it happen after leucotomy, and it is common knowledge that it may occur after great emotional shocks, cerebral trauma, asphyxia, and sudden metabolic changes, such as come with pyrexial and infectious diseases. With tumours or focal lesions of the third ventricle similar symptoms often disappear after removal of the lesion.

With convulsive therapy these states may completely recover or alter to closely correlated states: thus depression into mania, hypokinesia into hyperkinesia. Negative variations tended to change more easily into their positive correlates. Positive variations require more intensive treatment and have a greater tendency to relapse. Depressives may become hypomanics; manias relapse more frequently.

The best results are obtained in "vital depression," akinesia, dysthymia and twilight states, i.e., those symptoms depending on a kind of vegetative

regulation. When some of these symptoms co-exist they may have an independent evolution—for example hyperkinesia and elation may change to akinesia and elation. Then mixed states develop with discordant symptomatology, darkening the prognosis, until continuation of the treatment clears the picture. The more complex the symptomatology, e.g., presence of hallucinations and delusions, the more difficult the treatment becomes.

INSULIN THERAPY.

Insulin therapy has proved useful in paranoid states, with ideas of reference and delusions of enhanced significance, cosmic and religious experience, delusional inspirations and intuitions, conceptual conflicts of polar character, generally accompanied by increased awareness of significance and perplexity.

Passivity feelings, ambivalence, concretization of ideas and images, with awareness of a fleeting character of inner experience and low tenacity of attention. If these feelings are not in this setting of altered awareness and attention, not always easy to establish, they have a bad prognosis.

Altered spiritual feelings, altered sense of values, fanaticism, new political and moral views.

Loss of elasticity and reactive affective capacity, with discordant affect.

Hallucinations: It is not the mere presence or absence of hallucinations which is important, but their basis and characteristics. In anxiety, tension, perplexity, altered states of consciousness, hallucinations are dependent on these states and disappear with their recovery. A similar situation arises with hallucinations of delusional mood, reference states and many of the so-called physical and sexual hallucinations, in reality delusional interpretations of the altered vital feelings of the body.

Under the action of insulin these symptoms weaken, lose their grip on the personality, and finally disappear. Insulin seems to act in relation to the more differentiated functions of personality, such as the dynamic and spiritual feelings, the interests and motivations, and capacity for concentration and intellectual activity as opposed to the alterations of awareness, mood and psychomotor activity more accessible to convulsive treatment.

Insulin has a general sedative action, which can be seen even before the appearance of comas, and may be utilized in the treatment of acute and chronic excitement states. In states of emotional instability, as may appear in hebephrenic excitements and symptomatic and cycloid psychosis, as well as in certain states with slight clouding of consciousness, can the sedative action be lost in greater affective instability or in the aggravation of the clouding of consciousness? We are in agreement with Sargant (3) that insulin is contraindicated in depressive states unless they are accompanied by tension or anxiety. In pure depressive states people feel worse, and it produces no improvement in their general condition. If improvement in their mental state does not quickly follow the encouraging and often great gain in weight, then prognosis is poor.

Gain of weight, like the sedation, can be produced by subcoma doses, and such "modified insulin treatment" can be used for the treatment of exhaustion

states, drug addiction, and asthenic psychoneuroses. Sargant (4) has made extensive use of this form of treatment in war neuroses, and accepts as its principal indication those psychoneuroses accompanied by great loss of weight.

Insulin has a favourable effect on personality; it often produces in the individual better affective contact, awakening of sympathy, feeling and interest, extraversion and better adaptation to the environment, more objective attitude to the psychotic symptoms, especially the delusional and hallucinatory. If the psychosis is not cured, the personality changes are extremely useful to the application of occupational therapy and psychotherapy and to the future integration of the patient in society. Some patients finish insulin treatment with better personalities, to the astonishment of parents and friends.

COMBINED METHODS.

We have frequently seen the combined use of insulin and convulsive therapy, save situations in schizophrenia, depressions and atypical psychoses which had not responded to either alone. In these cases we found insulin and cardiazol more effective than insulin and E.C.T. For depressions we give insulin-cardiazol treatments two or three times a week. In schizophrenias we try this form of treatment if the patient has not responded as expected after 20 comas. Unlike Giorgi (5), who gives cardiazol in the second hour of insulin treatment, we use it in the third hour on the verge of the deeper coma stage. Psychoses with slight clouding of consciousness or with marked affective lability did the best with no insulin on cardiazol-free days.

Shock methods have proved a life-saving form of treatment in the syndrome known as "delirium acutum" or "acute fatal catatonia," which is accompanied by high irregular fever, tachycardia, leucocytosis, and increased blood urea. Leonhard (5) used cardiazol, and we found E.C.T. also of value, but not as effective as cardiazol. Somatic symptoms respond in a dramatic way, and fever and leucocytosis come down with each treatment. In the most advanced cases we give one or two fits daily for two or three days. Death is liable to occur more by under- than by over-treatment. Careful nursing and special care to avoid dehydration must be pursued side by side with convulsive treatment. When the acute stage is over E.C.T. is continued or insulin commenced, depending on the residual symptoms.

E.C.T. followed by insulin has also been used in the acute agitated psychoses, but usually by quick stepping up of insulin the necessary sedation is as soon produced.

Kögler (6) has used the quick stepping up of insulin and two treatments a day in delirium acutum, and claims good results. Our experience has not been favourable, and in some cases it has seemed that fever and confusion were aggravated.

Other forms of combined methods can be used. E.C.T., which had been ineffective in depressive states and in chronic excitement states, may become effective after leucotomy. Sands (8) has used successfully a combination of modified insulin and narcosis. Azevedo Mota is studying in Lisbon the combination of E.C.T. and fever.

LEUCOTOMY.

In leucotomy we consider the shock action, in many ways similar to that of convulsive therapy, that is effective in the same kind of symptoms, sometimes resulting in dramatic recoveries, and personality and vegetative changes of a far different nature. In general we can say that certain functional and organic deviations of behaviour are compensated by a new set of deviations produced by cerebral intervention.

The loss or attenuation of interest, initiative, spontaneity, emotional resonance and awareness of self have a beneficial effect on many symptoms, such as agitation, aggressiveness, impulsiveness, negativism, stereotypy, loquaciousness, depression, anxiety, tension, hypochondriacal pre-occupations, delusional activity and hallucinations. In depressive and anxiety states, the tension and anxiety, the emotional repercussion of the patient's preoccupation become less marked, though the fundamental depressive attitude may not disappear. In manic states we have seen an appreciable attenuation of the agitation and affective exaltation, but the typical manic ideation persisted, though the flow was smaller.

It is important to have a good knowledge of prepsychotic personality because of the possible aggravation of certain trends of character, such as apathy, irritability, disinhibition. If the psychosis changes of personality are similar to the above stated, leucotomy may further aggravate them except in marked irritability, which may be lessened. Leucotomy allows a new integration of personality which goes on for two or more years. Unless careful and intensive rehabilitation is pursued the possible benefits of the operation cannot be obtained.

DISCUSSION.

The therapeutic action of physical methods seems to have no bearing on the aetiological causes of the psychoses. The same factors of favourable or unfavourable prognosis for spontaneous evolution, such as environment, constitution, personality, the acute or insidious onset, the tendency to recovery, fluctuations or progressive deterioration, have the same importance in the case of therapeutical recovery. We can see the total recovery of a depressive state without influencing in any way the organic process and symptoms in more direct relationship with it. We have seen such an evolution in a case of G.P.I. beginning with a depressive state, in which there was rapid recovery of the latter with convulsive treatment; the paralytic process manifested itself afterwards by its neurological and humoral symptoms, which cleared up with malaria treatment.

On the other hand, the treatment of organic diseases causing psychotic symptoms can have no influence on these symptoms if they are of the type usually curable by physical methods. In a case of G.P.I. total humoral recovery by specific treatment was not accompanied by any change in akinesia and mutism which characterized the mental state, but which cleared up promptly with E.C.T. Some hallucinatory paranoid states, coming on after malarial treatment do well on convulsive and insulin treatment or leucotomy.

Akinetic states in pellagra which do not recover after nicotinic acid do very well with E.C.T. Post-infective stupors may last months until a few convulsive treatments stop them, and the same can be said of a great number of symptomatic psychoses. Of particular interest was a hallucinatory paranoid state in pernicious anaemia, which persisted despite a normal blood picture produced by hepatic extracts, but was cured by E.C.T.

E.C.T. is of no avail in reactive depression as long as the psychological factors are the most important determinant in the depressive state. In these cases E.C.T. comes as one more trauma and the patient may be made to feel worse. In long-standing reactive depressions the importance of psychological factors may recede, but the depressive mood persists. Then E.C.T. can be useful particularly if inhibition and dysthymia are outstanding. In some of our cases the depressive state got better, but there remained a depressive lability and a despairing mood, which could now be more adequately dealt with by psychotherapy.

The non-specific character of these methods of treatment is justified by the non-specific type of the symptoms treated by them. We submit that they arise from deviations of biopsychological functions released by the noxious factors, which once in existence may persist for a longer or shorter time. The disturbances of biopsychological function alter the totality of mental life, and manifest themselves in changes of the affective, conative, and cognitive spheres. In a normal individual they function as an integrated whole supra- and subordinated in several ways, reciprocally stimulating and inhibiting each other. In their pathological variations the same complex interplay occurs again, and it is only in the extreme variations that the disturbance of one function seems to dominate the whole picture.

The effectiveness of the multiple approach in the treatment of mental diseases is more the consequence of this totally integrated activity than a manifestation of the insufficiency or backwardness in the methods of treatment. It is an expensive error to lean on one exclusive line of therapeutic approach. The clinics where the best results are obtained are those in which all available methods are applied carefully and with discrimination.

The treatment of focal infections, of endocrine and metabolic disturbances, of vitamin deficiencies has a favourable effect on the evolution, and on the tendency to relapse.

Psychotherapy and occupation therapy must be applied concurrently. We have seen manias, depressions, and cycloid psychoses fail to recover and even become worse with ambulatory E.C.T., and recover easily with their admission to hospital and adequate provision of psychotherapy and occupational treatment. The latter is very useful in the conservation and development of the unaffected mental functions and the consequent compensation of the morbid behaviour. It allows a better adaptation to hospital life, and later an easier integration in society.

At the present time we must therefore use all the available combinations necessary to the treatment of the different symptoms. Such a technique requires an intensive study of the symptoms of each case, both before and during the treatment of the illness.

The careful study of symptoms and their groups is, in the present time, more likely to assist general understanding than their classification into two or three diagnostic labels, and may help to give some understanding of their physiopathological basis.

The non-specific character of many mental symptoms is a well established fact that we owe mostly to the studies of Bonhoeffer (8) on symptomatic psychoses, and which Bumke (9) has lately extended tentatively to the symptoms of schizophrenia, based on the assumption that this disease arises from toxins produced in the organism, which act secondarily on the brain. This would explain why schizophrenic symptoms can have a fugitive and capricious appearance, and why many of them have great similarity to the symptoms of some intoxications (alcohol, hashish, mescaline, etc.).

We cannot discuss fully these problems here, nor the problems related with the aetiology of the changes in biopsychological functions. By their dual nature they can be altered either by psychological or toxic and organic or degenerative factors. As with all the more differentiated and later developed functions, their hereditary basis is specially liable to alteration.

Longer catamnesis and adequate numbers of typical cases are still necessary to answer the very interesting question of the influence of physical methods on the periodic psychosis. E.C.T. seems to have no effect, but with insulin and particularly with leucotomy some striking results have been obtained, particularly with some short-period relapsing catatonias and cyclothymias. We have seen some manic-depressives and periodic catatonias relapse years after their cure by insulin and leucotomy, but there is no doubt that in some cases a stabilizing result has been obtained.

The historical basis and the already-made attempts at the individualization of biopsychological functions must be looked for in our other publications.

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