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INSULIN SHOCK TREATMENT IN SCHIZOPHRENIA

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WITHIN two years of Sakel's introduction of the insulin shock treatment for schizophrenia a number of reports were published from several European hospitals. Most of the reports confirmed the claims of Sakel, that in patients whose illness had been of less than twelve months' duration, one could expect about 80 per cent remissions. These encouraging results led to the introduction of this method at the Manitoba Hospital, Selkirk, in November, 1936. The purpose of this paper is to report the results we have obtained in the first 100 patients who have completed treatment.

We have followed in general the technique of treatment outlined by Sakel in his monograph, and with his later modifications. The fasting patient is given an intramuscular injection of insulin between 6.30 and 7.00 o'clock in the morning, the dose being so regulated as to produce a gradually deepening sleep until coma is reached in about four hours. The duration and depth of coma is varied, depending upon the mental reactions shown by the patient, both during hypoglycæmia and in the post-hypoglycæmic period of the day. Treatment is given on six days a week unless contraindicated by some unfavourable reaction. Our experience well supports the contention of Sakel and others that the routine of treatment presents a different problem for each patient and does not lend itself to a standardization of procedure.

The number of treatment days required by the different patients was very variable. The shortest was 17 days, the longest 333 days, and the average 81 days. The patient was not judged to be unresponsive to treatment unless there had been no definite improvement after 40 comatose periods had been induced. In general, the recent cases required less prolonged treatment than those in which the illness had been of several months' duration. Some patients with mild symptoms and of recent onset

obtained a rapid and full remission without requiring a comatose period. The coma dose varied from 32 to 310 units of insulin, with an average of 128 units. The patient was not considered to be comatose until, along with the usual hypoglycæmic symptoms, the corneal reflex could not be elicited.

There was one death in this series. This occurred on the forty-seventh day of treatment, after the patient had been in coma for sixty-five minutes, and was associated with hæmorrhage into the floor of the 4th ventricle. Another significant feature of this case was a markedly enlarged liver. This organ weighed 2.3 kg., and microscopically showed shrinkage of the liver cells and marked exudate into the blood sinuses. Apart from this death none of the patients showed any permanent ill effects from the treatment. One of our patients who had been in hospital for over four years required 333 days of treatment, including 228 comatose periods, to obtain a social remission. She had 23 spontaneous convulsive seizures and received 58,685 units of insulin. When treatment was discontinued she had gained 23 pounds in weight and presented no subjective or objective symptoms to indicate that the treatment had produced any ill effects.

No definite selection of patients for treatment was made. Only 8 of the schizophrenic patients admitted to hospital during the period covered by this report have not been placed on treatment. Three of these had a definite history of psychosis extending over several years, and it was considered that the mental change which had taken place was largely irreversible. Consent for treatment could not be obtained for another three patients, and two patients had evidence of cardio-renal disease.

Our results are presented in conformity with the pattern which has been accepted by a majority of those who have reported on insulin

shock therapy. The patients are grouped according to duration of illness, and the results obtained are qualitatively classed into four groups. The terms and definitions we have used are those suggested by the Canadian National Committee for Mental Hygiene. "Full remission" indicates that, at the time of probation from hospital, we considered the patient was free from any psychotic symptoms, had good insight into the nature of his illness, did not show any residual personality change, and was able to resume life at his previous level of efficiency. "Social remission" means that the patient was free from symptoms, but had some minor defect such as alteration in personality or a lowered level of efficiency. The patient classed as "improved" may still have some symptoms, or has other defects which prevent him from making an adjustment outside the hospital, except under a certain amount of protection. The term "unimproved" is self-explanatory. I would add, however, that a number of patients so classed have been able to make a more satisfactory hospital adjustment as a result of their treatment.

Table I classifies the patients according to duration of illness before treatment and the results of treatment. There were 38 patients with illness of less than six months' duration. Of these 22, or 57.9 per cent, had a full remission, 12, or 31.6 per cent, a social remission, 1, or 2.6 per cent, was improved, and 3, or 7.9 per cent, including the one patient who died, were classed as unimproved. Thus for this category 92.1 per cent of the patients were benefited by treatment.

Twenty-two patients had an illness of 6 to 12 months' duration before treatment. Four of these, or 18.1 per cent, had a full remission, 7, or 31.8 per cent, a social remission, and 2, or 9.2 per cent, were improved, giving a total of 59.1 per cent benefited patients.

There were 17 patients who had been ill from one to two years prior to treatment. Three, or 17 per cent, had a full remission, 4, or 23.5 per cent, a social remission, and 1, or 5.9 per cent, were improved for a total result of 47 per cent. The group with a duration of illness over 2 years included some patients who had been in the hospital for over 5 years. Of the 23 patients in this category 2, or 8.7 per cent, had a full remission, 1, or 4.3 per cent, a social remission,

and 6, or 26 per cent, were improved, making a total of 39 per cent who responded to treatment.

TABLE I.
RESULTS OBTAINED WITH INSULIN SHOCK TREATMENT

Duration of illness	Total No.	Full remission (percentage)	Social remission (percentage)	Improved (percentage)	Total benefited	
					No.	Percentage
-6 mos.	38	57.9	31.6	2.6	35	92.1
6-12 mos.	22	18.1	31.8	9.2	13	59.1
1-2 yrs.	17	17.6	23.5	5.9	8	47.0
2+ yrs.	23	8.7	4.3	26.0	9	39.0
Total..	100	31.0	24.0	10.0	65	65.0

Stated more briefly, patients who had been ill less than 6 months showed by far the best response to treatment. With the increasing duration of illness there is a rather rapid decrease in the number of patients benefited and in the quality of the benefit received. For the whole group 65 per cent showed response to treatment. This was made up of 31 per cent full remissions, 24 per cent social remissions, and 10 per cent improvement. Thirty-four per cent were unimproved, and there was a mortality rate of 1 per cent.

These results are similar to those being obtained in a number of clinics in Europe and America. Müller,¹ reporting on 495 cases from Switzerland, had 81 per cent benefited patients in the category with an illness of less than twelve months' duration, and a total result of 66 per cent of benefited patients for the whole group. In a group of 1,365 patients treated in the New York State Hospitals,² there were 80.7 per cent benefited patients in the group with an illness of less than six months' duration, and a total result of 61.3 per cent.

Table II presents a composite picture of the results we have obtained with insulin shock treatment and those we formerly obtained with the ordinary therapeutic measures. The first insulin-treated patient was discharged from our hospital in January, 1937. This table gives the total admissions and discharges and the number of discharged patients who had benefited by hospital care during the period, January, 1937 to August, 1938, inclusive. The percentage of discharged and benefited patients based on admis-

sions is also given for this period. These results are compared with those of the preceding five years. During this twenty month period we admitted 108 schizophrenic patients. There were 89 schizophrenic patients discharged, and 81 of these were improved at the time of discharge. For the five years 1932 to 1936 inclusive the figures were 322 admissions, 148 discharges, and 122 of the discharged patients had benefited by hospital care. Thus our discharges were 82.2 per cent for this period of insulin treatment, as compared with 46.5 per cent for the previous five years, and the benefited cases 75 per cent of admissions as compared with an average of 37.8 per cent for the five preceding years. In other words, our discharge rate for schizophrenic patients had increased to 176.7 per cent and benefited patients to 198 per cent of that prevailing before insulin treatment was used.

TABLE II.

COMPARISON OF RESULTS OBTAINED WITH INSULIN SHOCK TREATMENT AND WITH "NON-SPECIFIC" TREATMENT

Period	Admissions No.	Discharges		Benefited	
		No.	Percentage	No.	Percentage
Jan., 1937 to Aug., 1938 inclusive	108	89	82.2	81	75.0
1932-1936 inclusive	322	148	46.5	122	37.8

In a number of reports on insulin shock treatment the nature of the full remission or recovery obtained has been a subject of special comment. It has been our experience that often one of the earliest changes shown by the insulin patient who obtained a full remission is a return to normal affectivity, and, when free from symptoms, these patients are much more in harmony with their environment than one was formerly accustomed to expect. Further, if we accept that the spontaneous full remission or recovery rate in schizophrenic patients is 10 per cent, then the results we have obtained and those being reported by others indicate that insulin shock therapy will at least double this rate. This feature of the treatment can eventually have an important bearing on the permanence of the improvement obtained.

Up to the time of writing we have been able to keep informed of the progress of 61 of the 65 patients whom we classified as benefited with

insulin treatment. Ten of these patients have been returned to hospital, after an average of 8 months' adjustment. Three had been classed as full remissions, 6 as social remissions, and 1 as improved. Two other patients, one classed as a social remission and one as a full remission, have shown some return of symptoms, while one patient classed as a social remission has improved sufficiently to be included in the group of full remissions. The 55 patients which are at present out of hospital have adjusted for an average of ten and a half months.

Eight of the ten patients who were returned to hospital were again placed on treatment. Three of these have responded favourably and the other five failed to show any definite benefit. It is as yet far too early to express any opinion as to the tendency that insulin-treated patients may have to recurrence of symptoms, but the quality of the improvement that the patients obtain encourages one to believe that these patients will at least be able to make as satisfactory and permanent an adjustment as those who have a spontaneous remission.

One additional feature of the insulin treatment is of considerable importance. It is the period of hospitalization. Our patients who responded to this therapy required an average period of seventy-nine days for their treatment. Their stay in hospital would as a rule require an additional week for examination before treatment and about one month for observation following treatment, or a period of hospitalization of about four months. This is just half the average period of hospitalization required by the patients who obtained a spontaneous remission.

COMMENT

Insulin shock treatment appears definitely to increase the patient's prospects of being benefited by hospital care. The benefit obtained is qualitatively superior to that we are accustomed to expect in patients who obtain a spontaneous remission, the period of hospitalization is decreased, and the tendency to recurrence of illness should at least be no greater than in those patients who obtain a remission with the usual mental hospital procedures.

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