

Hemodialysis in Schizophrenia

Results in Three Chronic Cases

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Summary. Therapeutic trials with hemodialysis have been performed in three cases of chronic schizophrenia. The severely ill patients had been hospitalized for more than ten years and had not responded to different types of conventional somatic treatment. Psychopathology was evaluated by use of the IMPS, BPRS, and NOSIE scales. No improvement could be observed as a consequence of 12 (11 in one case) hemodialysis treatments. Rather, some deterioration occurred in two of the patients. This result is not in accord with the markedly positive findings of Wagemaker and Cade (1977). However, further studies appear necessary to render final conclusions.

Key words: Schizophrenia – Hemodialysis – β -Endorphin.

Zusammenfassung. Bei 3 Patienten mit chronischer Schizophrenie wurden Therapieversuche mit Haemodialyse durchgeführt. Es handelte sich um Schwerkranke, die seit über 10 Jahren dauerhospitalisiert waren und auf konventionelle somatische Behandlungen nicht angesprochen hatten. Die psychopathologische Beurteilung erfolgte unter Verwendung der IMPS-, BPRS- und NOSIE-Skala. Nach einer Serie von 12 (in einem Fall 11) Haemodialysen konnte in keinem der Fälle eine deutliche Besserung nachgewiesen werden; in zwei von ihnen kam es hingegen zu einer Verschlechterung. Dieser Befund ist im Widerspruch zu den positiven Resultaten von Wagemaker und Cade. Für eine endgültige Beurteilung sind allerdings noch weitere Studien erforderlich.

Schlüsselwörter: Schizophrenie – Haemodialyse – β -Endorphin.

Introduction

Considerable attention has been raised in biological psychiatry by the report of Wagemaker and Cade (1977) on the curative effects of hemodialysis in patients

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with chronic drug-resistant schizophrenia. The rationale for a justification of such therapeutic trials stems from the following sources: The fact that several typical symptoms of schizophrenia (e.g., hallucinations and delusions) resemble phenomena which can be induced by psychotogenic drugs has led to the hypothesis that schizophrenic psychoses are caused by endotoxic substances and that, consequently, the elimination of these chemical agents should result in a remission of psychotic symptoms. Many years ago this idea encouraged studies on possible therapeutic actions of blood exchange and of hemodialysis in schizophrenic patients. Thus, Reiter (1938) performed blood exchange transfusions in four schizophrenic patients and observed an improvement in three cases which lasted for 3—4 weeks. Kielholz (1949), using the same therapeutic concept for patients with catatonia, observed in three of six patients a recovery from catatonic stupor. Later on, Feer et al. (1960) and Thölen et al. (1960) were the first to use hemodialysis as a therapeutic procedure in schizophrenia: They claimed to have produced remarkable results in four catatonic patients. These observations fell into oblivion later when the introduction of neuroleptic therapy opened an effective new somatic treatment. Some optimism concerning the possible curative actions of the hemodialysis method is legitimate, however, since it may be appropriate to eliminate hypothetical endotoxic psychotogenic substances from the blood of schizophrenic patients.

The sensational reports by Wagemaker and Cade (1977) were not intended to represent a reevaluation of the older work of Feer et al. (1960) and Thölen et al. (1960). Rather, they were the consequence of a chance observation. Further work was performed to collect information about the possible benefit of hemodialysis in schizophrenic patients who were treated by dialysis in the past because of chronic failure of the kidneys (Ferris, 1977; Levy, 1977; Weddington, 1977; Port et al., 1978). In 50 cases, only 16% of the patients showed an improvement, a percentage very close to the rate of spontaneous remissions. However, all the studies conducted so far lacked standardized psychopathological evaluation and these studies implicated problems with the selection of patients.

Another spectacular finding has been published in connection with the studies of Wagemaker and Cade (1977). Palmour (1979) reported that very high amounts of leucine- β -endorphin were present in the dialysate and plasma of patients who had been hemodialyzed by Wagemaker. These data gave rise to the hypothesis that the chemically abnormal endorphin leucine- β -endorphin might represent the psychotogenic material responsible for the schizophrenic process. However, this part of the evidence appears questionable, since Höllt et al. (1978), using a highly sensitive β -endorphin radioimmunoassay, could not observe a marked elevation of β -endorphin-like immunoreactivity in the plasma of schizophrenic patients. The same was true for the three patients in this study (cf. also Emrich et al., 1979).

The aim of the present work is a reevaluation of a possible curative action of a series of 12 hemodialyses in patients with chronic drug-resistant schizophrenia.

Methods

The following criteria for the selection of cases were defined: the first manifestation of disease was after the age of 18; the maximum age was 50; productive symptoms were present during the previous three years; there was no complete remission during the previous three years;

patients mentally retarded before the onset of the disease were excluded; all other psychiatric and major somatic disorders were excluded; and the previous treatment for schizophrenia with neuroleptic drugs had proved unsatisfactory for at least six months.

It turned out to be rather difficult to find cases fulfilling these criteria, although our search was generously supported by colleagues from the Bezirkskrankenhaus Haar (directors Dr. Dr. Chr. Schulz, Dr. R. Oechsner and Dr. H.-D. Martschke) and the Bezirkskrankenhaus Kaufbeuren (directors Dr. L.-W. Diehl and Dr. H. Heinemann). Informed consent was obtained from the three patients included in our study. Four cases had to be excluded because: (1) an impressive improvement occurred after withdrawal of neuroleptic medication; (2) the consent of the patient was cancelled; (3) hostile, belligerent behaviour developed after cessation of neuroleptic treatment; and (4) consent for a shunt operation was withdrawn.

Case Reports

Therapeutic trials were performed on three patients with chronic schizophrenia not responding to neuroleptic therapy.

Case 1. Mr. R.A., a 30-year-old former draftsman, had suffered for ten years from auditory hallucinations, typical schizophrenic thought disturbances, and delusions of persecution; he had had defect symptoms for about seven years (ICD 295.6). Therapy with neuroleptic drugs and electroconvulsive treatment had not improved the symptomatology. Therefore, the patient was kept in a psychiatric hospital for ten years. The primary symptoms at the beginning of the study were auditory hallucinations and anergia.

Case 2. Ms. Z.K. was a 37-year-old former receptionist, who had been hospitalized for 17 years because of chronic therapy-resistant schizophrenia (ICD 295.3). She had vivid delusions, auditory hallucinations, slightly incoherent thinking, neologisms, and mannerisms. Treatment with insulin-induced coma, fever, ECT, and neuroleptic drugs had proved unsuccessful.

Case 3. Mr. G.S., a 38-year-old male, a former temporary worker, had suffered 17 years from chronic schizophrenia (ICD 295.6). He had been hospitalized for 14 years. His main symptoms included different types of delusions, incoherent thinking, aggression, and defect symptoms. Therapy with ECT and neuroleptic drugs did not improve the symptomatology.

Technique of Hemodialysis. In case 1 hemodialysis was performed by puncturing the femoral vein; in the other two cases, an arteriovenous fistula was performed. The dialysis equipment was a Rhodial apparatus with a RP6 polyacrylonitrile membrane. The duration of treatment was 4 h once a week, 12 times total in cases 2 and 3 and 11 times total (because of an attack of dizziness during the twelfth dialysis) in case 1.

Method of Evaluation of Psychopathology. In the pretreatment phase and during the period of hemodialysis the symptomatology was evaluated by a psychiatrist five times per week using the IMPS (Lorr et al., 1962) and the BPRS (Overall and Gorham, 1962). Furthermore, the nurses rated the patients' behavior according to the NOSIE (Honigfeld et al., 1976).

Results

The time-course of psychopathological evaluation of the three patients of this study is shown in Figs. 1–3. No improvement during and/or after the hemodialysis could be observed in any of our cases: In case 1 (Fig. 1) a slight deterioration of schizophrenic symptoms was reflected by the scale values of the IMPS and BPRS during 11 hemodialyses. A neuroleptic treatment with haloperidol, started after cessation of the dialyses, induced some improvement about 20 days later. In case 2 (Fig. 2) practically no changes were observable other than minor fluctua-

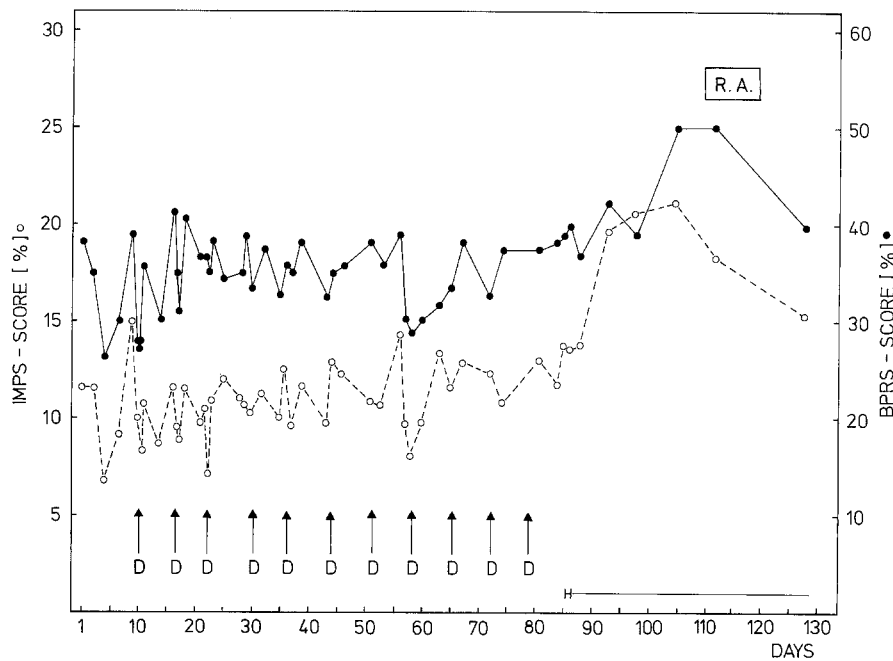


Fig. 1. Psychopathological ratings as a function of time in a 30-year-old chronic schizophrenic patient. Open circles: IMPS-sum score; dots: BPRS-sum scores; *D*: dialysis; *H*: haloperidol treatment

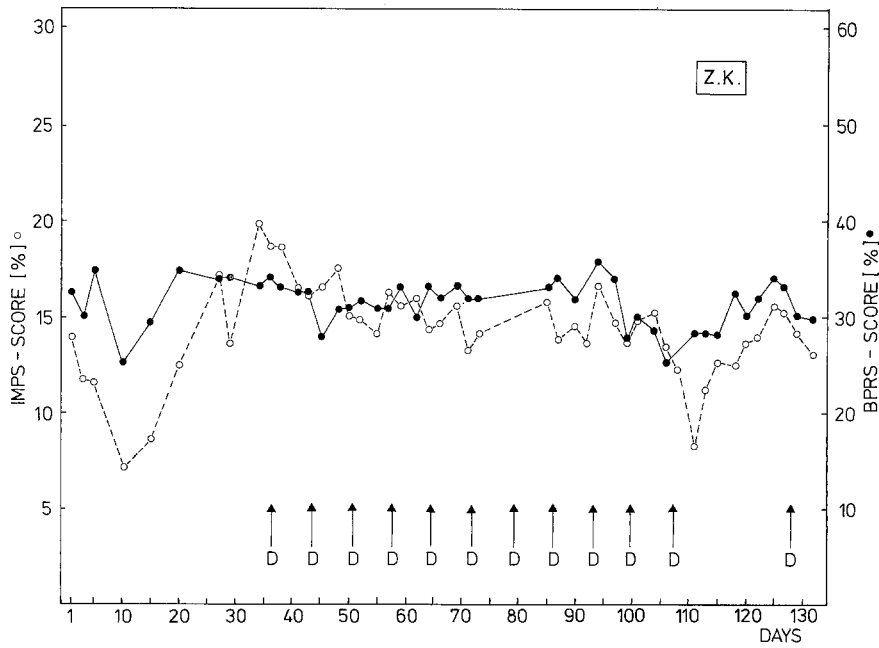


Fig. 2. Psychopathological ratings as a function of time in a 37-year-old chronic schizophrenic patient. Symbols as in Fig. 1

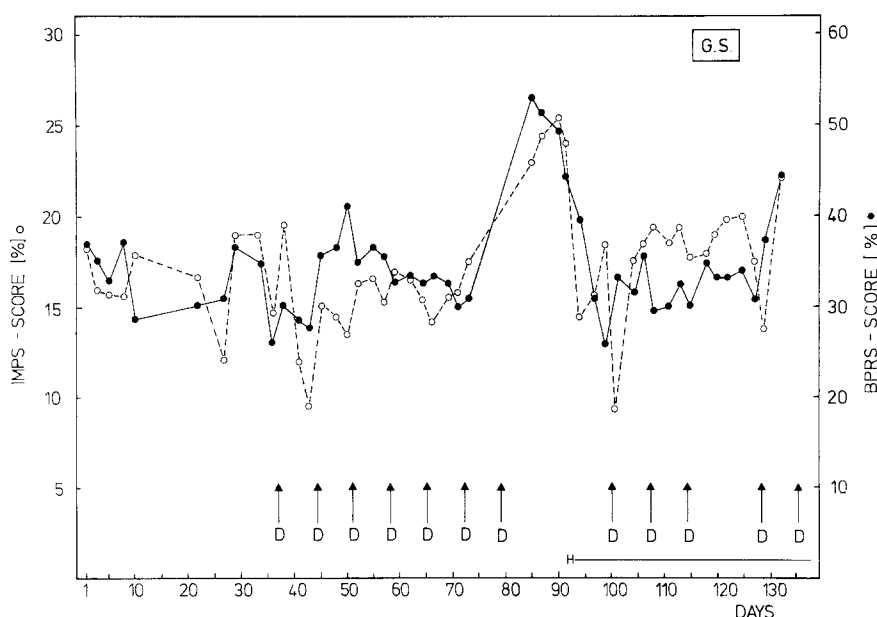


Fig. 3. Psychopathological ratings as a function of time in a 38-year-old chronic schizophrenic patient. Symbols as in Fig. 1

tions (days 10–20 and 100–120). In case 3 (Fig. 3) an impressive deterioration occurred after a series of seven dialyses which necessitated a neuroleptic treatment with haloperidol. The pretreatment level of psychopathological ratings was reached again during this treatment which was combined with five more dialyses.

Discussion

The negative results of hemodialyses in three cases of chronic therapy-resistant schizophrenia cannot be interpreted statistically and no definite conclusions can be drawn. However, these findings appear to be discouraging concerning the possible therapeutic action of hemodialysis in chronic schizophrenics. Our results do not agree with the markedly positive results of Wagemaker and Cade (1977). Only patients who had been hospitalized continuously for at least 10 years were selected for our study. They were severely ill and showed no improvement with all the different types of conventional somatic treatment. This very fact may be regarded as a bias against the hypothesis. On the other hand, however, positive findings in patients who have a fluctuation of symptoms are not conclusive, since in these cases spontaneous remissions occur. Our study is regarded as one contribution to an evaluation of the possible benefit of hemodialysis in schizophrenia. Further studies appear necessary to render final conclusions. These investigations should be performed in accordance with the recommendations of the GVC/DGMBT-Symposium, Tutzing 1978 (Hippius et al., 1979).

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