

Emotional Reactions of Patients on Chronic Hemodialysis

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A group of 9 patients in chronic hemodialysis was intensively studied for a year. The main findings were that the patients were content, functioned well in everyday life, and were nearly free of psychiatric symptoms. Uniform defenses—denial, displacement, isolation, reaction formation, and projection—were found in all patients, irrespective of varied backgrounds. These defenses, while adaptive in one sense, led to marked ego restriction. The hypothesis was advanced that the main stress of chronic hemodialysis was the dependency on the machines and the staff, and the aggression resulting from this dependency. Some of the clinical manifestations also suggested brain dysfunction. Psychological tests and EEG study furnished additional proof.

A GROUP of 9 patients in chronic hemodialysis was observed and interviewed over a period of up to 1 year. The most striking first impression was that the patients seemed to be quite content and tranquil. They occasionally reported problems such as insecurity about the future and the inability to plan for it, the threat of death, dependence on the medical staff as well as some difficulties with everyday tasks. Although these problems seemed very serious and often

frightening (to the observer), they were reported without any affect.

Even upon closer acquaintance with the patients in various situations over a relatively long period of time, the impression gained was the same. At the same time the patients, as well as their families, reported good adaptation. The team, medical and paramedical personnel, also reported only minor problems of management. Disruption of emotional equilibrium was only occasionally observed, when transient depressive trends or anxiety reactions appeared. The good adaptation and emotional stability seemed incredible in the light of the actual stress inherent in the patients' situation.

Reports in the literature on the rehabilitation or adjustment of patients in hemodialysis are still rather scanty. The groups studied are usually small and the follow-up short. The reports are also

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often contradictory: The group working in the Seattle Center reported good and often full rehabilitation.¹⁻³ In studies at the same center,^{4, 5} it was found that the emotional adjustment of the majority of the patients was from adequate to superior. Others, however, report many psychiatric complications,^{6, 7} and in a later report from the same center,⁸ emotional adjustment to the basic disease was stated to be poor; and in hemodialysis, a multitude of management problems occurred with severe psychiatric disturbances appearing in the majority of the patients.

The present report can be regarded only as a preliminary one. From the information and data gathered through the year, we tried to focus on some of the basic problems, while knowing that we were doing injustice to many. This preliminary study, therefore, is centered on two questions: Do the patients in chronic hemodialysis really achieve emotional equilibrium, and if so, by which mechanisms and at what price?

Method and Procedure

Hemodialysis Unit

The hemodialysis center is a four-bed unit, using KIIL type dialyzers. Each patient undergoes dialysis twice a week, coming to the center around 4 P.M. and leaving around 8 A.M. the next morning. The aim of the unit is to prepare the patient for renal

transplantation, either from a living donor or a cadaver.

The team dealing with the emotional aspects of hemodialysis joined the center after it had been working for some time. This part of the team included a part-time social worker, a part-time psychologist, and a full-time psychiatrist. It was called in mainly because of the impression, or rather the feeling of the medical team, that patients in hemodialysis must have emotional problems. Our task, therefore, was quite undefined and included the investigation as well as the treatment of such unknown emotional problems.

Patients

The group studied included 9 patients; their varied backgrounds are presented in Table 1.

When the psychiatric study was started, the patients were at different stages of treatment. Table 2 describes the patients at the time the psychiatric study was started in September 1966 and at the time of the present report, September 1967.

Collection of Data

CLINICAL INFORMATION. Information was gathered through psychiatric interviews. The first two interviews with each patient were carried out in the psychiatric OPD. The aim of the initial interviews was to gain a general impression of the problems of patients in chronic hemodialysis. It was later decided that patients be interviewed while in dialysis. The reason was twofold: not to add another disruption to the patient's life outside the hospital, and to ensure some regularity of the interviews.

TABLE 1. PATIENTS' BACKGROUND

<i>Pt.</i>	<i>Sex</i>	<i>Age</i>	<i>Origin</i>	<i>Yr. in Israel</i>	<i>Marital status</i>	<i>Ed.</i>	<i>Occup.</i>
1	M	32	Israel	—	M + 1	Univer.	Teacher
2	F	30	Israel	—	M + 2	H. S.	Housewife
3	F	35	Iran	17	M + 3	Elem.	Housewife
4	F	21	Israel	—	S	Univer.	Student, pharmacol.
5	M	27	Nigeria	5	S	Univer.	Student, med.
6	F	28	India	6	M + 3	None	Housewife
7	F	40	Israel	—	M + 4	H. S.	Housewife
8	M	21	Israel	—	S	Elem.	Unskilled worker
9	F	24	Israel	—	M + 1	Elem.	Typist

TABLE 2. PROGRESS OF PATIENTS' CONDITION BETWEEN SEPTEMBER 1966 AND SEPTEMBER 1967

Pt.	Sept., 1966	Sept., 1967
1	18 mo.*	10 mo. after renal transpl. from cadaver
2	6 mo.*	7 mo. after renal transpl. of a "free" kidney; return to dialysis because of rejection of transpl.
3	5 mo.*	17 mo. in dialysis; post-bilateral nephrectomy in preparation for cadaver transpl.
4	2 mo.*	14 mo. in dialysis; to undergo transpl. from mother
5	—	2 mo. after transpl. from cadaver done after 12 mo. of dialysis (+10 mo. in a center outside Israel)
6	—	Died following cadaver transpl. after 9 mo. of dialysis
7	—	11 mo. in dialysis
8	—	10 mo. in dialysis; to undergo transpl. from mother
9	—	4 mo. in dialysis

* In dialysis.

From this it can be understood that the patient's motivation for a longer contact with a psychiatrist was minimal to nonexistent. They were halfheartedly ready to cooperate as far as research was concerned but violently rejected the idea that they might be in need of psychiatric help. Our lack of knowledge in the first stages, combined with the patients' conscious resistance to psychiatric intervention made the weekly interviews usually informal, varying in length from 20 min. to 1 hr., depending mostly on the individual patient's willingness or need to talk. Only later, as we gained a better idea of the problems and evolved some hypotheses as to the dynamics, did the sessions begin to take the form of supportive dynamic psychotherapy. A more detailed description of the psychotherapeutic work with these patients is outside the scope of this preliminary report. The session often ended with an informal group discussion, which included patients as well as nurses and visitors.

When hospitalized for shunt operations or other medical reasons, the patients were seen nearly daily, sometimes at their own request and often at the medical team's demand that "you must give him/her more attention now." In addition, the patients had free access to the psychiatrist and could drop in or fix an appointment whenever they wished. It should be mentioned that during the first half-year none did so, and only lately have patients started asking for an interview on their own initiative. The

clinical impressions are therefore based on a minimum of 50 sessions with each patient, while most of the patients were interviewed much more. Patient 6 was nearly excluded from the clinical study because of lack of a common language (the patient spoke an Indian dialect).

PSYCHOLOGICAL TESTS. Tests were done in the middle phase of the reported period (January to June 1967). The results reported, therefore, exclude 1 patient who had already undergone transplantation at the time of testing. Most of the testing was done while the patients were undergoing dialysis. The battery of tests included Raven,⁹ Kohs,¹⁰ Draw-a-Figure,¹¹ Taylor's Manifest Anxiety Scale,¹² Barron's Ego Strength Scale,¹³ Sentence Completion Test,¹⁴ Mira Test (P.M.K.),¹⁵ and Rorschach. The tests were selected to tap as many areas as possible. Preference was given to tests that had been translated into Hebrew and standardized locally.

Results

Clinical Observations

Emotional Equilibrium

The emotional equilibrium of the patients seemed generally good. It was evaluated by two criteria.

LEVEL OF JOB FUNCTIONING. Five of the 9 patients continued to function in their occupations as before. Patient 7, a

housewife, seemed to work less (and arranged for some help at home); another (Patient 8), who had stopped working about 6 months before starting dialysis, did not return to his job. Patient 6 had a complicated problem since she was living in another town (some 70 miles away). For some time she traveled back and forth twice a week, but later moved to Jerusalem. Patient 9 did not return to work, partly because of medical indications and complications and partly because of her reluctance to start at a new job. On the whole, therefore, there was some, but not much, change in the level of functioning as far as work was concerned, in comparison to recent years before the onset of clinically manifest uremia.

PSYCHIATRIC SYMPTOMS. Such symptoms were extremely rare: Patient 5 had some paranoid trends which disappeared after about 1 month. Among the others there was little anxiety, while depressive signs appeared irregularly and lasted usually a day or two (not including the patients after transplantation*). We have tried to establish correlation or connection between the transient psychiatric symptoms and general medical condition, relations with family, relations with the medical team, or the content of the psychiatric sessions. In the beginning, symptoms seemed to appear and disappear without any reason. Gradually, the impression was gained that the transient psychiatric symptoms are inversely related to the general medical condition, that symptoms disappear when patients have to be hospitalized for medical complications, and appear when a patient has to make up his mind or make a decision (often on trivial matters). In other words, psychiatric symptoms were more likely to appear when a patient had to function independently. It should be mentioned that these criteria—level of job functioning

and lack of overt psychiatric symptoms—can be regarded only as partial criteria for emotional equilibrium, evaluating only some aspects of adjustment while giving less information about underlying processes and cost of adaptation.

Mechanisms of Adaptation

It seemed that the patients mobilized patterns of behavior and defenses in order to maintain this emotional equilibrium. All patients mobilized similar defenses, though to varying degrees, depending probably on their premorbid personalities. This vagueness regarding the patients' premorbid personalities is not due to lack of effort on our part. It should be mentioned first of all that it was very difficult to define the "premorbid period." Patients 4 and 8 had been ill from childhood, while others reached adulthood in a healthy state, or not knowing that they were ill. Some of the patients had suffered clinically for many years before coming for hemodialysis (Patient 3), while others had known for years that they were "laboratory sick" but felt fine till the final and often acute crisis (Patients 2, 4, 7, and 9). Still others hardly knew that anything was wrong with them until coming for dialysis (the most extreme example was Patient 6 who developed acute renal failure after her third confinement and was admitted for acute dialysis, which became chronic as it was found that she had had chronic glomerulonephritis). Therefore, discussion of premorbid personalities has to be limited to "predialysis personalities," with the understanding that years of chronic disease might have affected the personalities before.

It was also found extremely difficult to infer the "predialysis personality." All patients, throughout the year, hardly ever talked about the past and very little of their future, but talked a great deal about the present.

These difficulties created the situation in which, although a great deal was

*The emotional problems of transplantation will be described in a separate report.

learned about the patients in dialysis, hardly anything can be said about their personalities before dialysis. Further study of this problem is now under way. At any rate, similar and often identical defenses were observed in all patients. The defenses most commonly used were denial, displacement, isolation, projection, and reaction formation.

DENIAL. Denial seemed to be a major defense used by all the patients. It included denial of the original kidney diseases as well as denial of the dependence on the machine and the medical team: Contrary to the "usual" patients with organic diseases, these patients never discussed details of their disease. We believe that this massive use of denial of their past, including denial of the original kidney disease, is responsible in part at least for the difficulty mentioned before in obtaining data about the "pre-dialysis personality." They rarely mentioned what remained of their kidney function (for example, urination was scarcely spoken of), or even whether they had kidneys at all. Sometimes the denial was so extreme that it practically disrupted reality testing. For example, Patient 3 reported urination several months after bilateral nephrectomy. While the patients spoke freely and constantly about the technical aspects of dialysis (potassium level, hematocrit, water retention, etc.), they seldom mentioned the machines. Even when describing and comparing other centers, they omitted mention of the machines (which were often different from those used in our center).

The constant danger of death was partially denied. Threatening complications were completely denied. For example, Patient 7 recently had rather severe pericardial effusion. She woke up at night from severe precordial pain and shortness of breath, but decided it was nothing or "a small bronchitis" and contacted the physician only 12 hr. later, all the while knowing that another pa-

tient had been hospitalized in the last month because of similar though less severe symptoms.

In addition, complete denial of emotional problems was found. Patients were surprised and often offended at our thinking that they might have emotional difficulties. Only very gradually were they ready to discuss any emotional aspect of their lives but continued to stress that dialysis had neither influenced their personality, nor created any emotional problems for them. Sex life and sexual problems, as well as the physiological aspects (like menstruation), were rarely mentioned.

DISPLACEMENT. This seemed to be another frequent and major defense mechanism. Clinical evidence of this was found in the patients' attitude to the Scribner shunt. They talked a lot about their shunts, they compared shunts, and often spoke of previous shunts. They feared shunt operations more than nephrectomy or transplantation. Although they were often ashamed of the shunt and tried to hide it, they took meticulous care of their shunts and were proud that theirs were "better" than those of other dialysis centers. This intense preoccupation with the shunt was understood as displacement of the fear of bodily change, the threat of a major mutilation and of death, to something less terrifying and more controllable, as, for instance, the shunt. Such displacement offered the patients some additional means of mastery, expressed, for example, in the meticulous care of the shunt.

ISOLATION OF AFFECT. This mechanism was prominent. As already mentioned, terrifying subjects were discussed with no feeling, the most common statement being "everything will be all right." It is nearly impossible to describe the carefree atmosphere in the center, the repeated parties (birthdays, hundredth dialysis, etc.), and the over-all impression that nothing really hurts, is frightening, or even really important.

PROJECTION. Projection was an often used defense, though rarely to the degree of distorting reality testing. Statements often heard were: "People cannot understand what being in dialysis means." "I have to hide the shunt because people are disgusted by it." "If friends were to know about my condition, they would pity me." "The family expects me to work as hard as before," etc. It seemed, therefore, that much bewilderment and fear of body change, as well as demands for coping behavior, were projected onto society and especially the family. Rarely did the projection reveal the underlying aggression toward the team.

REACTION FORMATION. Another major defense was reaction formation. Some clinical phenomena such as the comparative lack of acting out, the absence of overt aggression, the extremely good relations with the team resulting in an unusually cooperative behavior, were understood as reaction formation to aggression.

"Price" of Adaptation

On the clinical level we found some evidence that this unexpectedly good adaptation cost the patients a great deal.

It should be mentioned, first of all, that contrary to the usual personality disturbances or neurotic reactions, the defenses in this group of patients were labile and often brittle. Surprising changes in combination and intensity of defenses over short periods of time were observed, resulting in ever-changing clinical pictures, changing behavior and facets of personality. At times, relatively small stress was often sufficient to produce a partial breakdown of the defenses, with the appearance of transient free floating anxiety, depression, or paranoid trends.

It appeared, furthermore, that the heavy investment in defenses impoverished the personality. Though good relations were maintained with everybody, all object relations seemed shallow, and

emotional involvement with other people was merely superficial. Relations within the group of patients seemed to be very good, though these, too, were superficial and lacking deeper involvement. For example, a patient wanted to change his dialysis days and switch from one group to another, but none of the patients agreed to change places with him, though it made no real difference to any of them. Interest in outside people or events was extremely limited, and hobbies were non-existent. The adaptability of the patients to new life situations was very limited. For example, for some time we had only a smaller group of patients (5 in number), and all of them underwent dialysis on the same 2 days. When more patients arrived, some of the patients had to be transferred to dialysis on different days. This change was extremely stressful for all of them. Each of them explained his objection in the same way: "I got used to dialysis on certain days; I got used to it and cannot just change it."

Demanding situations were either "ignored"—the patients continuing to function as before with no consideration for what was going on around them—or they created enough stress to break the defenses and then, as mentioned already, transient psychiatric symptoms appeared.

Psychological Tests

Test Behavior

Tests were administered during dialysis hours because the patients refused to do them during their "free time." Cooperation was limited. The relationship of the patients to two different examiners was the same—distant and mistrustful with no interest or joy in the performance. Patients were concerned about doing as well as others and were anxious to know how other people do these tests. Fear of not being "normal" was quite apparent.

The patients' behavior indicated that the test situation was a stress for them.

Anxiety was greater, as usual, in the unstructured test, and increased when they could not control the test situation or rely on situations previously known.

Test Results

In the present report, we include some of the test results of the 8 patients tested while in dialysis (Table 3). These results can be regarded only as preliminary until further analysis of tests and comparison of results to specifically matched groups is done. At the same time, we are trying to develop ways and means for gaining a better idea of the premorbid personality and for evaluating the predialysis level of functioning. In the present report, therefore, we concentrate on general tendencies and common trends, and ignore the individual variations.

Results in the intelligence test (Raven) showed a wide scatter but 7 of the 8 results were below the standard mean for the Israeli population, some of the subjects (Patients 3, 6, 7, and 9) getting scores well below the normal range. Even the highest score (Patient 4) seems rather poor, considering the fact that the patient is a university student, reported to have been brilliant. Altogether, considering the patients' educational background, it can be assumed from their scores on the Raven test, that there is at least a transient disturbance of intellectual functioning.

On the Kohs test, the patients' scores ranged from lower limits of normal to very low. Even when the total score was comparatively good, the way they coped with the task showed definite signs of organic brain pathology. All patients had difficulties in coping with these tasks, ranging from moderate difficulties to complete inability. They were unable to break up the figure into its parts, to analyze the whole into its components, or to synthesize. There was a tendency to overcome the difficulties in abstract approach by putting the blocks on the

model. Patients got "stuck" at certain stages of the task, for example, in shifting from 4 to 9 blocks. There was insecurity about color shades, difficulties in space orientation, and half rotation occurred. The performance of the patients did not improve when they received help.

On the Manifest Anxiety Scale (MAS), the patients did not differ in their scores from the Israel student sample. It should be noted that the patients denied suffering from symptoms that could be expected as part of their organic disease (vomiting, headaches, sleeplessness, or fatigue). They also denied that "life is a strain" or that "they worry." On the other hand, on the PMK, anxiety score was high (as the patients had no way of controlling their performance).

The patients showed some tendency to get a low score on Ego Strength Scale (ES), with the majority falling below the normal range.

Especially, the scores on the Manifest Anxiety Scale confirm the superficial impression of "normality."

On the Sentence Completion (SC) test, two (Patients 4 and 5) scored within what is regarded in Israel as the normal range. Their ambition level was good, sources of frustration and anxiety were realistic, and they tried to cope actively with frustration. On the other hand, the total score of the other patients was very low, while their self-image score was disproportionately high. It seems that this inflated self image reflects their struggle against dependency by unrealistically trying to master uncontrollable situations. For example: "I *try hard* to get well," or "my biggest aspiration is to *succeed* in the operation," or "when she saw that the chances were lost, she *tried*."

A discrepancy was therefore found between the results on MAS and to some extent ES on one hand and those of the SC test and the PMK on the other. If the patients had a choice of only two

TABLE 3. NUMERICAL RESULTS OF SOME OF THE PSYCHOLOGICAL TESTS

Pt. & sex	Test scores							Figure drawing	
	Raven	Kohs	M.A.S	ES	SC	Male fig.	Female fig.		
2 F	33	—	16	24	15	20	18		
3 F	16	7	30	21	8	19	26		
4 F	43	9	37	31	27	60	52		
5 M	32	8	15	26	25	25	0		
6 F	9	2	—	—	—	11	16		
7 F	9	2	19	27	13	31	38		
8 M	36	6	16	25	13	36	31		
9 F	24	6	22	30	10	20	21		
NORMAL*	31.5-49.5†	4.34-16.26‡	0-28†	31-47†		25.54-64.86§	28.1-64.5§		

All scores shown are raw scores except on the Kohs test, in which they are weighted scores. Raven test had a 20-min. time limit.

* Normal range (mean \pm 2 S.D.).

† Israeli population.

‡ Wechsler-Bellevue subtest, ages 25-29.

§ Goodenough combined score for ages 13-15.

answers (yes or no) (MAS and ES), they usually took a long time to answer and afterwards often changed the answers. It seemed quite obvious that they tried to answer as a "normal" person would have done. Therefore, ill health as well as emotional problems were denied, and the total scores did not differ greatly from those of the control populations. On the other hand, in the SC, where patients are less guided and the answers are spontaneous and therefore less controlled, they referred often to ill health.

In Table 4 are some examples, each pair taken from the record of the same patient and showing the effort to present a "normal" facade by denying ill health on the ES while spontaneously describing it on the SC.

Where aggression could be expected, the general attitude was compliant, passive, and conformistic, with denial and evasion of aggressive feelings. Fear was displaced to infantile sources of danger, probably in an attempt to deny the fear of death. For example, "I am afraid of a dog . . . of the sea . . . of darkness . . . of the night . . . of losing a ring." In the Rorschach test, the patients coped with the quest for control through rejection of the cards, whereas in the PMK the patients had no means of control; therefore, anxiety and aggression scored high.

The figure drawing test (together with

the PMK) aroused the greatest difficulties. Some patients insisted on copying a model and, when asked to draw freely, secretly looked for a model in the environment, complaining that "I have no fantasy"; "I can't draw"; "I never could draw." This was consistent with the search for "clues from the environment" in the other tests.

The drawings scored in the lower limits of the normal range for the age of 15 and in 4 patients below that level.¹⁰ Some scored lower than 5 years, the majority falling into the range of 8-9 years. (Though the shortcoming of using the Goodenough score for adults is recognized, it can be used to indicate the general tendency.)

The figures drawn, besides being crude, were matchstick-like, transparent without clothing; all had eyes, yet ears and hands were frequently omitted. In general, the figures were not "active"—they lacked movement, and if movement was indicated, it was passive or clinging. The characteristic of all was helplessness.

The drawings of the patient's own sex was often lower than those of the "other" sex, whereas no significant difference was obtained in the drawing of the "other" sex. The male figure was drawn first by 5 of the 6 female patients. The sixth female patient, who drew the female figure first, did not distinguish sex differences in her drawings but stated them verbally. The male patients drew the male figure first, but one patient, whose drawing was clearly recognizable as the figure of a man, called it at the interpretative stage "Buba" (doll).

The number of responses on the Rorschach was low ($R < 12$). Rejection of cards was frequent. A high percentage of vague, loosely organized, whole responses was found with difficulties of varying degree in breaking up into details and in shifting the concept (consistent with findings in Kohs and in Figure Drawing). Popular answers were either rare ($P < 25\%$) or exclusively used.

TABLE 4. EXAMPLES OF DENIAL OF ILL HEALTH ACCOMPANIED BY SPONTANEOUS DESCRIPTIONS OF IT

<i>Manifest Anxiety + Ego Strength (yes/no answers, permitting control through choice)</i>	<i>Sentence Completion (spontaneous answers with less control)</i>
I have very few headaches	She often complains about <i>headaches</i>
Most of the time I am healthy	Nothing is more frustrating than <i>sickness</i>
Most of the time I don't feel weak	She felt she suffered most from <i>weakness</i>

F percentage was very high and the form level was low ($p < 1.0$). There was no use of color (even in testing the "limits," no color responses could be elicited). The complete lack of color responses indicates poor object relationship. Movement responses were few and passive. FM responses were also rare and usually of passive quality. The range of interest was restricted with many perseverations.

In summary, the main findings of psychological testing were:

1. Performance level was low, with fluctuations. It is suggested that, considering the educational background of some of the patients, there is a loss in cognitive functioning, or, at least at times, patients cannot use their full capacities.

2. Signs of brain dysfunction were found in the majority of patients, and suspected in the rest.

3. The patients make efforts to achieve standard and normal behavior. These efforts, however, are not sustained and partial breakdowns appear. Avoidance of fantasy and fear of losing control are remarkable.

4. Object relations are shallow, and interest in the environment is minimal.

5. Sexual identification is immature and confused.

6. Anxiety is kept low by partial denial of ill-health and threat of death, as well as by complete denial and projection of aggression.

7. Severe problems exist concerning dependency. Some patients show extreme infantile dependency needs. On the other hand, all patients reject these longings, some by magical omnipotence and others by a stubborn "do-it-yourself" attitude.

Discussion

Observation over a fairly long period supported the first impression, that the patients managed to adapt to life in hemodialysis, continued to function quite

well, and were happy. This clinical impression of a superficially good adaptation was supported by the findings in the psychological tests, which are more accessible to conscious control (e.g., Taylor's Manifest Anxiety Scale and Baron's Ego Strength Scale). It seemed that this adaptation was greatly helped by the unusual support the patients received, mainly from their families.*

On the other hand, it was found that all patients used similar defense mechanisms. Defenses most commonly observed were denial, displacement, isolation, projection, and reaction formation. The similarity of defenses in patients with such different backgrounds suggests that the defenses are reaction to the specific situation of dialysis (information is currently being gathered in this respect through a thorough psychological-psychiatric evaluation of patients before dialysis, in order to gain an idea of the premorbid personality, and a few months after the beginning of the treatment, to evaluate the changes that have occurred).

If our impression is right that all patients in hemodialysis mobilize the massive defenses observed, a further question presents itself: What constitutes the extreme threat or stress to produce such a uniform mobilization, irrespective of the previous personality?

One threat seems fairly obvious, namely the ever-present danger of death. Nevertheless, we doubt whether it is enough in itself to explain the observed defensive behavior. This is a subject which the patients observed could discuss and quite often did (though with much isolation). Furthermore, it is well known that the reaction to the threat of death in any other group of "organic" patients is not so uniform and is determined more by the premorbid person-

*A detailed study of the families' reactions and their interaction with the patients will be reported separately.

ality.* Observing the defenses and the combinations of defenses in dialysis patients, we tried therefore to infer what they were fighting against.

It seems that the main problem of patients in dialysis is the question of dependency. They are utterly and completely dependent on the machines, on the team treating them, and even on the society that pays for treatment which they themselves cannot afford. They try to mobilize defenses against this dependency—they use denial and they use reaction formation (which leads to extremely independent behavior and rejection of help in all areas not directly related to the physical treatment). Mobilization of defenses, mainly denial, against this dependency was also observed by Wright *et al.*⁴ as well as by Shea *et al.*⁸ We believe that this feeling of dependency creates aggression which cannot be expressed because of the utter dependency. Again, defenses must be mobilized against this aggression—denial of aggression, projection of aggression, reaction formation against aggression.

The hypothesis, therefore, is that the main problem of patients in dialysis is the dependency, the aggression resulting from it, and the need to block any expression of this aggression. So far, some evidence has been found in support of this hypothesis. The over-cooperativeness of the patients was already mentioned. In the psychological tests, the fight against aggression and dependency was quite clear. Indirect evidence of this was the way the patients behaved when they had to be hospitalized for one reason or another. During hospitalization, they all felt emotionally better. They were more relaxed and friendlier. Patient 5 was on the brink of paranoid psychosis when he

had to be hospitalized for a shunt operation. Within a day all psychiatric symptoms disappeared. It seems, therefore, that when "sick," the patients can allow themselves some of the regression found in others who are organically ill; dependency is more acceptable, aggression therefore decreases, and the defenses are lowered.

Further evidence supporting our hypothesis was found in the difference observed within this small group of patients. Two of them (Patients 4 and 5) had the strongest striving for independence. These two were also given to extreme denial of dependency and aggression, as well as projection of aggression.

The defensive structure, though usually regarded as pathologic, was to some extent at least adaptive in this group of patients. They continued to function quite well and were fairly happy. As mentioned before, this good adaptation was somewhat only on a superficial level. The massive defensive structure was quite brittle, rendering the patients vulnerable to transient breakdowns with the appearance of transient anxiety or depressive reactions. Some of the psychological tests (e.g., Sentence Completion and PMK) gave information about this underlying anxiety. This defensive structure, on the other hand, led to the constriction of ego functions, notable on the clinical level and striking in the psychological tests. It also led to rigidity and inability to readapt to changing life situations. During the recent short war in Israel, the patients' interest in the dramatic events was minimal, their behavior hardly changed, and the discrepancy between their behavior and that of the rest of the population (including other patients) became striking.

We therefore arrived at the following hypothesis. The main adaptive difficulties of patients in chronic hemodialysis did not stem solely or even mainly from the threat of death itself, but additionally

*It might be added that after transplantation, though the threat of death increases, many of the defenses described above seem to dissolve. Information about personality changes after transplantation is now being gathered and will be reported separately.

and more importantly from the fact that continuation of life would depend on outside factors (machines, medical team, society, etc.). This dependency is unique and reminds one of the infant's dependency on his mother. Even in patients who could accept their dependency needs (conscious or unconscious), this complete dependency resulted in aggression. Expressing or feeling this aggression was too dangerous, and a wide range of defenses was mobilized against the feeling of dependency as well as against aggression. It also seemed understandable that while these defenses helped ward off anxiety, they impoverished the personality.

The problem, however, was further complicated by finding signs of brain dysfunction. The uniformity of reactions already suggested some such damage. Furthermore, while there were no gross clinical signs of brain dysfunction, some of the manifestations could be explained on this basis—for example, the patients' rigidity and inability to readapt to changing situations. As mentioned, signs of brain dysfunction were marked in some of the psychological tests, and an EEG study, which is now being carried out, shows abnormality in the records of most of the patients along the same lines as already reported in the literature.¹⁶

At this stage of preliminary study we can only say that the emotional reactions of patients in chronic hemodialysis appear to be the results of a number of factors: the premorbid and predialytic personalities (which must be further studied), possible brain dysfunction, and the special circumstances of life in hemodialysis. Though in the present report we concentrated on the last factor, we do not have proof that this is really the main aspect.

If the basic hypothesis is accepted that the defenses are mainly against dependency and the ensuing aggression, it becomes possible to formulate some dynamic criteria for the management and

selection of future patients for hemodialysis. It is suggested, therefore, that patients for whom dependency is more acceptable and/or patients for whom feelings and expressions of aggression are less threatening, might adapt to hemodialysis without the extreme mobilization of defenses and will not need to adapt at the cost of constriction of ego functions and/or overt psychiatric symptoms. On the other hand, it might be better to consider early transplantation or home dialysis (which gives at least some measure of independence) for those patients who cannot accept a dependent situation and/or for those who have a low frustration tolerance for their own aggression.

Summary

A group of 9 patients in chronic hemodialysis was intensively studied over a 1-year period.

The main findings were that the patients were quite content, continued to function in everyday life more or less as before, and were nearly free of any psychiatric symptoms, including anxiety.

Uniform and often identical defenses were observed in all patients, irrespective of age, sex, education, or premorbid personality. The main defenses were denial, displacement, isolation, projection, and reaction formation. The defenses, while adaptive in one sense, led to marked ego restriction.

The similarity of the defenses suggested that the patients were under extreme stress. The hypothesis was advanced that the main problem, stress and threat, was the dependency on the machines and the staff, and the aggression resulting from this dependency. Some evidence supporting this hypothesis was presented, and it was suggested that evaluation of acceptance of dependency and of aggression might serve as psychological criteria for selection of

patients for chronic hemodialysis, home dialysis, or transplantation, as well as a guide for their management.

Some of the clinical manifestations could also suggest brain dysfunction. Psychological tests and EEG study furnished additional proof. Further study, to elucidate the comparative influence of the various factors ("psychological" and "organic") is now being carried out.

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References

1. HEYSTROM, R. M., MURRAY, J. S., PENDRAS, J. P., BURNELL, J. M., and SCRIBNER, B. H. Two years experience with periodic hemodialysis in the treatment of chronic uremia. *Trans Amer Soc Artif Intern Organs* 8:266, 1962.
2. LINDHOLM, D. D., BURNELL, J. P., and MURRAY, J. S. Experience in the treatment of chronic uremia in an outpatient community hemodialysis center. *Trans Amer Soc Artif Intern Organs* 9:3, 1963.
3. MURRAY, J. S., PENDRAS, J. P., LINDHOLM, D. D., and ERICKSON, R. M. Twenty-five months experience in the treatment of chronic uremia at an outpatient community hemodialysis center. *Trans Amer Soc Artif Intern Organs* 10:191, 1964.
4. WRIGHT, R. C., SAND, P., and LIVINGSTON, G. Psychological stress during hemodialysis for chronic renal failure. *Ann Intern Med* 64:611, 1966.
5. SAND, P., LIVINGSTON, G., and WRIGHT, R. C. Psychological assessments of candidates for a hemodialysis program. *Ann Intern Med* 64:602, 1966.
6. KEMPH, J. P. Renal failure, artificial kidney and kidney transplant. *Amer J Psychiat* 122:1270, 1966.
7. GONZALEY, F. M., PABICO, R. C., MALER, J. F., and SCHREINER, G. E. Further experience with the use of routine intermittent hemodialysis in chronic renal failure. *Trans Amer Soc Artif Intern Organs* 9:11, 1963.
8. SHEA, E. J., BOGDAN, D., FREEMAN, R. B., and SCHREINER, G. E. Hemodialysis for chronic renal failure; psychological considerations. *Ann Intern Med* 62:558, 1965.
9. Standardisation of progressive matrices. *Brit J Med Psychol* 19:137, 1943.
10. WECHSLER, D. *The Measurement of Adult Intelligence*. Williams & Wilkins, Baltimore, 1944.
11. HARRIS, D. B. *The Goodenough Draw-a-Man Test. Drawing as Measures of Intellectual Maturity*. Harcourt, New York, 1963.
12. TAYLOR, J. A. A personality scale for manifest anxiety. *J Abnorm Soc Psychol* 48:285, 1953.
13. BARRON, F. An ego strength scale which predicts response to psychotherapy. *J Consult Psychol* 17:211, 327, 1953.
14. STEIN, M. The use of the sentence completion test for diagnosis of personality. *J Clin Psychol* 3:46, 1947. (Adapted into Hebrew by Shaanan, J. Megamoth, 1961)
15. MIRA Y LOPEZ, E. *Le Psychodiagnostic Myokinétique*. Centre de Psychologie Appliquée, Paris, 1951.
16. HAMPERS, C. L., DOAK, P. G., CALLAGHAN, M. N., TYLER, H. R., and MERRILL, J. P. The electroencephalogram and spinal fluid during hemodialysis. *Arch Intern Med* 118:340, 1966.