

***STUDY OF PSYCHIATRIC DISORDERS IN
RELATION TO ADEQUACY OF
HAEMODIALYSIS***

Thesis

*Submitted For Partial Fulfillment of
Master Degree of Internal Medicine*

By

Manal Ahmed Safey El-Deen

M.B.B.Cs

53993

Supervised by

Prof. Dr. Wahid El Sai d

Prof. of Int. Med. and Nephrology
School of Med. Ain Shams University



Dr. Mohamed Hamed Ghanem

Assistent Prof. of Psychiatry
School of Med. Ain Shams University

Dr. Mohamed Aly Ibrahim

Lect. of Int. Med. and Nephrology
School of Med. Ain Shams University

Faculty of Medicine
Ain Shams University

1994





وقل رب زدني علما

صدق الله العظيم



ACKNOWLEDGMENT

I am greatly honoured to express my deepest gratitude to my **Prof. Dr. Wahid El-Said**, Professor of Internal Medicine, Faculty of Medicine, Ain Shams University for his kind heart, fatherly concern and continuous encouragement and for his valuable guidance and advice during the whole of this thesis.

I wish to express my gratefulness to **Assist. Prof. Dr. Mohamed Hamed Ghanem**, Assist. Prof. of Psychiatry, Faculty of Medicine, Ain Shams University for his valuable advices and assistance throughout the work of this thesis.

I would like to thank **Dr. Mohamed Aly Ibrahim**, Lecturer of Internal Medicine, Faculty of Medicine, Ain Shams University, for his kind help. My sincere thanks also to **Dr. Samia Ashour**, Lecturer of Neurology, Faculty of Medicine, Ain Shams University for her great effort which was done in this study.

My sincere thanks to **Assist. Prof. Dr. Shadia Barakat**, Assist. Prof. of Physiology, Faculty of Medicine, Ain Shams University for her great help and guidance. Also I would like to thank **Dr. Alaa Abd El-Rahman**, Assist. Prof. of Internal Medicine & Nephrology & **Dr. Mohamed Abd El-Ghani**, Lecturer of Internal Medicine & Nephrology, Faculty of Medicine, Ain Shams University for their valuable advice and support.

LIST OF ABBREVIATIONS

List of Abbreviations

ESRD	:	End stage renal disease.
HD	:	Haemodialysis.
CAPD	:	Contineous ambulatory peritoneal dialysis.
IWG	:	Inter dialytic weight gain.
BUN	:	Blood urea nitrogen.
PCR	:	Protein catabolic rate.
rHuE-Po	:	Recombinant human erythropoitin.
Vo₂ (max)	:	Maximum oxygen uptake capacity.
TAC_{urea}	:	Time averaged concentration of urea.
Po₄	:	Phosphate.
Ca	:	Calcium
KT/V	:	$\frac{\text{Urea clearance of dialyzer} \times \text{time of dialysis session}}{\text{volume of urea distinlution (0.58 of tot al body weight)}}$
mg/dL	:	milligram/ $\frac{1}{10}$ liter
HT	:	haematocrite.

CONTENTS

	PAGE
INTRODUCTION	1
AIM OF THE WORK	7
REVIEW OF LITRATURE	8
SUBJECTS AND METHODS	49
RESULTS	54
DISCUSSION	88
SUMMARY AND CONCLUSION	101
REFERENCES	104
ARABIC SUMMARY	\

INTRODUCTION

INTRODUCTION

All dialysis patients find themselves abjectly dependent on a procedure, medical facility, or group of medical personnel (**Levy; 1983**). They are also exposed to other stresses including regimentation of dietary, fluids and medication intake, multiple losses of job, freedom and life expectancy, in addition to the stress imposed by illness itself and associated sexual dysfunction (**Abram; 1970**). Over all, the psychologic response of a given patient to illness will depend on his or her premorbid personality, the extent of support by family and friends and the course of underlying disease (**Levy; 1988**).

Because of a desire to provide the most suitable treatment for haemodialysis patients, psychological, physical and social problems influencing psychiatric conditions of the patients were studied.

Psychiatric conditions were most favorable between 3 and 12 months after the introduction of hemodialysis, whereas in other hemodialysis terms (before 3 months and after one year) depression was noticed in more than half of the subjects. In most of the patients, irritation, anger, loss of brightness and sympathy were observed during the first 3 months or later than 12 months after introduction of therapy respectively. A poor

outcome of psychological conditions after the introduction of haemodialysis was indicated by the presence of family problems, symptoms of physical origin, the absence of full-time work, having a young child or children, age in the 20-40 year group **(Kanekos et al., 1986)**.

In a study to detect the influence of time on personality during hemodialysis treatment it was found that people on hemodialysis generally had a high level of neuroticism with a considerable level of extraversion and lie or dissimulation and as time of hoemodialysis became over 4 years there is a decrease in the level of neuroticism, extraversion and lie. It is concluded that this chronic illness places patients first on a very high level of neuroticism as a confrontation to the stress provoked by their stimulation. Following this, due to the patients' awareness of their chronic state the level of neuroticism decreases, their high level of introversion and the absence of lie as a possible defense mechanism of denial facing their hard reality being more significant **(Ventura et al., 1989)**.

Patients with ESRD are also suffering from disturbance in sexual function and have significantly higher serum prolactin level than those with normal sexual function. **(Mastrogiacomo et al., 1984)**. Hyperprolactinaemia may affect sexual behavior by the following mechanisms: -interference with gonadal response to gonadotrophins resulting in decreased sexual steroids **(Ramirez et al., 1977)** or by directly negatively affecting CNS areas responsible for sexual behavior and activity. **(Lim et al., 1979)**.

Alleyne et al., 1989 found that there were changes in sexual functioning of the patient with ESRD after starting hemodialysis. This was marked by decrease in the sex urge, the frequency of intercourse, and the level of satisfaction. The majority of the male patients reported some amount of morning erection indicating reasons other than physical reasons for their sexual dysfunction.

Fluid non compliance in patients with end stage renal disease is a wide spread problem with severe consequences for health. Cognitive variables (of locus of control, self evaluation of past compliance and self efficiency to resist fluid intake) account for fluid non compliance and predict future adherence. Patients high in negative emotions complied equally as well as patients low in negative emotions (depression, anger and anxiety) but were found to report substantially more symptomatology and distress associated with their treatment (**Schneider et al., 1991**).

The predictive factors of a good adjustment to hemodialysis are an internal locus of control, defense mechanisms such as denial, regression and projection and family factors as a good parental relationship and optimistic and positive interactions. At the same time socio demographic factors (age, sex, education, intelligence) are not found to be associated with adjustment (**C0ron; 1989**).

Hemodialysis is one of several forms of treatment for patients with acute and chronic renal failure. During the 1950's and early 1960 uremic patients underwent dialysis sporadically and

intermittently to avert death. With the development of permanent access to circulation, maintenance hemodialysis two or three times a week for 6 to 12 hours each, was noted to improve blood pressure control, hematocrite level and general well being (**Esbach et al., 1966**).

With the development of more efficient dialyzers, treatment averaged 3 to 5 hours usually 3 times a week. Reduction in dialysis time based on clinical grounds or by kinetic modeling has been shown not to be associated with increased morbidity or mortality in selected patients. (**Teschner et al., 1983; Raja et al., 1987**). In the 1980's, development of ultrafiltration controllers and availability of bicarbonate dialysate, variable sodium concentration and more porous or efficient membranes led to the development and implementation of high - flux or high efficiency dialysis, in which dialysis times are being reduced to as low as 1.5 to 2 hours three times a week in selected patients. (**Von Albertini et al., 1984; Keshaviah et al., 1985**).

The dialysis prescription to correct accumulation of toxins and fluid is modified according to the clinical observations and measurements of presumed uremic toxins (i.e., urea and creatinine). A number of quantitative or semiquantitative indices of uremia and adequacy of treatment have been proposed. Based on an early impression that neuropathy did not occur with peritoneal dialysis, despite higher blood levels of retained small solutes than were usually found with hemodialysis. It was speculated that substances of middle molecular weight were important in the pathophysiology of the uremic syndrome. The resulting "square meter-hour" hypothesis stated that clearance of small molecular weight substances was dependent on dialysate

and blood flow rates, whereas that of middle molecular weight substances was related to membrane surface area and time. It was concluded, therefore, that optimal therapy should be based on the later parameters (**Babb et al., 1971**). This hypothesis subsequently led to the "Middle molecule theory" (i.e. that Middle molecular weight toxins were responsible for a large part of the uremic symptomatology (**Babb et al., 1972**).

These hypotheses led to changes in the approach to dialytic therapy, in that schedules, and treatment plans were designed to increase clearance of middle molecules, sometimes at the expense of clearance of small solutes.

A number of investigators found support for the middle molecule hypothesis as (**Christopher et al., 1971 and Hattler et al., 1973**). Whereas other studies have found little evidence that middle molecules are more important than small solutes in the uremic syndrome. (**Shaldon et al., 1975 and Lowrie et al., 1976**).

Other quantitative tools for the determination of the adequacy of treatment have been proposed. Motor nerve conduction velocity and sensory neuropathy were suggested as the best indicators of over all uremic status [**Kjellstrand et al., 1973; Teehan et al., 1974**].

Some suggested that these measurements provide less accurate clues to adequacy of dialysis than do neurobehavioral indices (**Teschner et al., 1977**).

In other studies uremic symptomatology correlated with the plasma level of urea and other small molecules. Infusion of urea to high levels has been shown to cause nausea, vomiting, headache, lethargy and a bleeding tendency. The level of urea necessary to

cause symptoms is much higher than that seen in clinical disease; thus urea and creatinine are markers for some as yet undefined small molecules (**Johnson et al., 1975**).

The National Cooperative Dialysis Study (NCDS) established the importance of the time averaged concentration of blood urea nitrogen as a determinant of morbidity among patients maintained on hemodialysis. Although urea is not itself toxic, it serves as a surrogate for those low molecular weight products of protein catabolism that do contribute to uremic toxicity. It was found that at 1 gm/kgm body weight/day as an adequate nutrition, a time-averaged concentration of BUN (50 mg/dL) corresponding roughly to a mid week predialysis BUN of 80 mg/dL, as recommended by NCDS is equivalent to a Kt/v of 1 as recommended by Gotch and Sargent. (1974). Based on the ease and accuracy of measurement, TAC urea would seem the more reliable marker for monitoring the adequacy of dialysis (**Lerine et al., 1990**).

Urea kinetic is often regarded as the best method for assessing the dialysis adequacy. However, other parameters are involved in the monitoring of end stage renal disease patients as predialysis concentration of plasma potassium, bicarbonate, calcium, phosphate and hematocrite value and should be taken into account for assessing the adequacy of dialysis (**Yanai et al., 1992**).

AIM OF THE WORK