DIALYSIS IN THE AGED

Study of Patients Sixty Years of Age or Older

MARSHALL FRANKLIN, M.D.*
Department of Artificial Organs

CLINICAL judgment often interdicts hemodialysis in a patient more than 60 years of age even though the clinical condition might be greatly improved for some time by this procedure. In our experience, hemodialysis has proved to be of considerable benefit in this age group if the renal lesion itself is not accompanied by a fatal condition elsewhere in the body. This report describes the results of dialysis in 41 patients 60 years of age or older who were treated during the three-year period of January 1, 1957 through December 31, 1959.

The over-all management of these patients, in addition to hemodialysis, included control of fluid and electrolyte balance, close medical observation, and administration of drugs.

According to the type of renal insufficiency, these patients were divided into two groups, *acute uremia* and *chronic uremia (Table 1).* Each of these was then divided into two subgroups designated *survival* and *death.* For the purpose of this study, survival in acute renal failure indicates return of adequate renal function; survival in chronic renal failure indicates improvement sufficient to sustain life for two months after the first dialysis. Also, for this analysis we have divided the group of patients who died, into two subgroups designated as potentially *recoverable* and *irrecoverable.* We have considered renal insufficiency as an irrecoverable condition only when it accompanied an incurable and fatal illness such

Table 1.—*Grouping of 41 patients 60 years of age or older who underwent dialysis in the period from 1957 through 1959*

Status after dialysis	Number of patients	
	Acute uremia (29)	Chronic uremia (12)
Survival	9	4
Death	20	8
Potentially recoverable	3	2
Irrecoverable	17	6

This study was prepared under the guidance and sponsorship of W. J. Kolff, M.D., Head of the Department of Artificial Organs.

**Fellow in the Department of Artificial Organs.*

as ruptured aortic aneurysm, major cerebrovascular accident, carcinoma, fatal myocardial infarction, massive pulmonary embolism, or severe pulmonary insufficiency due to overwhelming acute bronchopneumonia. The basis for this classification is from our experience and that of Scribner and associates,[1] that chronic renal failure can be controlled for many months by repeated dialyses, and, therefore, that it need not be an immediately fatal illness even though renal function itself cannot support life.

Acute Uremia

There were 29 patients with acute uremia; 17 were irrecoverable. Of the 12 potentially recoverable patients, nine survived. Three potentially recoverable patients died of pneumonia, severe heart disease, or massive gastrointestinal bleeding. It is impressive that in this small series of 29 patients, acute uremia developed in 13 patients postoperatively, particularly after corrective vascular surgery. There were eight patients who had had vascular surgery; five had such extensive extrarenal disease as to be irrecoverable; of the three potentially recoverable patients, one actually recovered. In comparison, of the 21 other patients in the acute uremia group, of nine potentially recoverable patients eight survived.

Chronic Uremia

There were 12 patients with chronic uremia; six were irrecoverable. Six were potentially recoverable; four survived. Of the two potentially recoverable patients who died, one had pulmonary edema with paralytic ileus and the other had chronic pyelonephritis that was inadequately treated. (Treatment was abandoned in the latter case when it was found the patient had chronic renal disease.)

Precipitating Incidents

A definite incident precipitated the need of hemodialysis in many patients in this study. It is apparent from *Table 2* that infection and surgical procedures were the predominant precipitating incidents. Protracted surgical procedures, particularly corrective vascular surgery, carry great risks in this group. In other patients, the chronic uremic state was accelerated by the occurrence of protracted nausea and vomiting.

Discussion

The case histories reviewed here are of patients treated during a period when indication for dialysis in acute renal failure was not so clearly defined as now, and when dialysis in patients with chronic uremia was considered unwise. Since early 1960, it has been the practice here to dialyze the patients who have acute or chronic renal failure, as often as is needed to keep them symptom-free and in nearly normal electrolyte balance. Currently, survival in unselected patients with

Table 2.—*Incidents precipitating renal failure requiring hemodialysis in 38 patients 60 years of age or older*

Precipitating incident	Number of patients			
	Acute uremia		Chronic uremia	
	Survival	Death	Survival	Death
Surgery	3	10	—	5
Infection	1	5	—	2
Hepatorenal syndrome	—	2	—	—
Renal calculus	—	—	1	—
Exacerbation of lupus erythematosus disseminatus	—	—	1	—
Other	5*	3†	—	—

*Carbon tetrachloride poisoning, burns, transfusion reaction, trauma, carcinoma.
†Carcinoma, congestive cardiac failure, constrictive pericarditis.

chronic renal failure has consistently been longer than two months beyond the first dialysis among those patients who receive succeeding hemodialyses and who follow the prescribed medical management. Although these patients have been less than 60 years of age, there is no reason to believe that similar results would not be obtained in patients 60 years of age or older.

Conclusion

From the analysis of 41 cases it is possible to conclude that advanced age alone does not contraindicate dialysis, and that the survival rate is high in potentially recoverable patients. Of 12 patients with potentially recoverable acute uremia, nine recovered; and of six patients with potentially recoverable chronic uremia, four recovered. Since a true judgment of recoverability often can only be established through necropsy, hemodialysis should not be withheld from the elderly patient unless there is unquestionable evidence that survival is not possible. Acute renal failure resulting from acute tubular necrosis is still amenable to management (which includes exacting medical care as well as hemodialysis) and leads to recovery despite advanced age. Aged patients with chronic renal failure also can be helped with hemodialysis.

Reference

1. Scribner, B. H.; Buri, R.; Caner, J. E. Z.; Hegstrom, R., and Burnell, J. M.: Treatment of chronic uremia by means of intermittent hemodialysis; preliminary report. Tr. Am. Soc. Artif. Int. Org. 6: 114-122, 1960.