

Incidence of Hyperglycemia in Renal failure

Dr.V.Usha padmini.MD¹, Dr.Manohari ramachandran,MD², Dr.C.Vignesh³,

¹Assistant professor, Department of General Medicine, Coimbatore Medical College &Hospital.

²Assosiate professor, Department of General Medicine, Coimbatore Medical College & Hospital.

³Post graduate in General Medicine, Department of General Medicine, Coimbatore Medical College & Hospital.

Abstract: Renal failure ,both acute and chronic is seen in 10% of the patients attending medical department in this hospital.These patients present with various symptoms and signs and laboratory findings of acute and chronic renal failure. One among these various laboratory parameters is abnormality of glucose metabolism. The urea gets elevated in both acute and chronic renal failure.the uremic serum inhibits uptake of glucose by the skeletal muscle and cells.the insulin metabolism gets affected in renal failure.These leads to impaired glucose tolerance and cause hyperglycemia in some cases of both acute and chronic renal failure.

I. Introduction

According to various literatures on this subject, disturbed carbohydrate metabolism in renal failure (acute and chronic) are due to

1. Impaired glucose tolerance which is primarily due to diminished sensitivity of the target cells to insulin, and/or;
2. Delay in the catabolism of insulin which may decrease insulin requirements in diabetes.

Hence a study of glucose intolerance in renal failure was conducted in patients who had unequivocal evidence of renal failure,both acute and chronic irrespective of aetiology,documented by clinical and laboratory parameters.In all these patients care was taken to exclude diabetes mellitus by history of the illness or treatment to diabetes mellitus.

Aim Of The Study

To detect the incidence of glucose intolerance in non diabetic.

1. acute renal failure
2. chronic renal failure patients and
3. To find out the correlation between the severity of the renal failure and the occurrence of glucose intolerance.

II. Methods And Materials

Sixty six cases of renal failure have been studied,of which 30 cases of acute renal failure of duration ranging from 3-6 days and thirty six cases were of chronic renal failure of duration of 3 months to 3 years. In acute renal failure snake bite ,acute diarrhoeal disease are the causes.

Cases for the study were selected at random,which consisted of acute renal failure (oliguric phase) of etiology of snake bite and acute diarrhoeal disease belonging to any age group and both sexes and chronic renal failure of varying severity belonging to different group and either sexes.

All these patients were evaluated clinically by taking detailed history and clinical examination and the following investigation were adopted.

Investigations To Confirm The Severity Of Renal Failure:

Blood urea, serum creatinine, serum calcium serum phosphorus ,haemoglobin percentage, X ray KUB region, ultrasound

Investigation Confrom The Presence Or Absence Of Glucose Intolerance:

Blood glucose fasting and post prandial,Glucose Tolerance Test

III. Results

Age And Sex Incidence Of Renal Failure

Of the sixty six cases studied 30 belong to acute renal failure category of which 15 were males, and the remaining 15 were females. Thirty six of the sixty six cases were chronic renal failure which consists of twenty one male patients and fifteen female patients. The age group of these sixty six patients range from 15-55 years.

Age In Years	Sex Male	Female	Renal Acute	Failure Chronic	Total
16-25	15	12	12	15	27
26-35	12	12	12	12	24
36-45	6	6	6	6	12
46-51	3			3	3
	36	30	30	36	66

Laboratory Investigations:

Acute Renal Failure: No of cases-30

In this category of acute renal failure 50% had biochemical evidence of several renal failure.

INVESTIGATIONS	VALUE	NO.OF.PATIENTS	PERCENTAGE
Blood urea mgm/dl	50-80	9	30%
	80-100	21	70%
Serum creatinine mgm/dl	2-4	15	50%
	4-6	15	50%
Potassium mEq/litre	<5.5	21	70%
	>5.5	9	30%

Chronic Renal Failure: No.of cases -36

Of the thirty six patients who were in chronic renal failure 58% showed biochemical changes of severe renal failure.

INVESTIGATIONS	VALUE	NO.OF PATIENTS	PERCENTAGE
Blood urea mgm/dl	75-150	12	33.3%
	151-225	24	66.6%
Serum creatinine mgm/dl	4-8	15	41.66%
	8-12	21	58.33%
Potassium mEq/dl	<5.5	18	50%
	5.5-7	18	50%

Glucose Tolerance Test: No. of cases -66

Of the sixty six patients, with renal failure who under went GTT, three patient in each acute and chronic failure showed glucose intolerance (200 mgm/dl at the end of 120 minutes) and fasting blood glucose value greater than 120 mgm/dl which accounts for about 10% of the cases in each category.

Twelve patients belonging to chronic renal failure showed evidence of impaired glucose tolerance (120 minute value between 140-200 mgm/dl and three value greater than 200 mgm/dl)accounting to 18.2%. Totally 27.3% of the cases with renal failure (both acute and chronic) showed abnormality in glucose metabolism.

No.of patients	Renal failure	Fasting Blood glucose 120 mg/dl	GLUCOSE TOLERANCE TEST		PERCENTAGE
			Intolerance	impaired tolerance	
30	Acute	3	3	-	10%
36	Chronic	3	3	12	41.33%
66		6	6	12	27.3%

IV. Conclusion

1. Abnormal glucose metabolism (both intolerance and impairment) occurs in 27.3 percent of renal failure patients (18 out of 66 cases). In acute 10% (3 out of 30 cases), in chronic 41.7% (15 out of 36 cases).
2. Glucose intolerance occurs in both acute and chronic renal failure patients. In acute renal failure it occurs in about 10% of patients (3 out of 30cases).In chronic renal failure patients it occurs in about 8.33% of the patients (3 out of 36 cases). In overall it occurs in about 9.1% of patients belonging to both acute and chronic renal failure (6 out of 66 cases).
3. Impaired glucose tolerance did not occur in acute renal failure patients. But it occur in chronic renal failure patients which accounts about 33.3 percent.(12 out of 36 cases).
4. Incidence of abnormal glucose metabolism more common in patients with chronic renal failure .so this abnormality is directly proportional to the duration of the illness.
5. Abnormal glucose metabolism is more commonly occurs in patients with severe renal failure. So this is also directly proportional to the severity of the illness.
6. None of the patients presented in hypoglycaemia.

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