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Research Article

Frequency of unrecognized renal dysfunction in patients of stroke presenting to a tertiary care hospital

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ABSTRACT

Introduction: Renal insufficiency is a strong predictor of adverse outcomes in patients with various cardiovascular conditions. A significant proportion of patients with serum creatinine levels slightly above the upper limit of the normal range or even within the normal range have impaired renal function. **Objectives of the study:** The objective of this study is to determine the frequency of unrecognized renal dysfunctions in patients with stroke presenting to the tertiary care hospital.**Methodology of the study**: This cross sectional study was conducted at Medical unit II Jinnah hospital Lahore from 10th January to 9th July 2018. Total 224 patients fulfilling the inclusion criteria will be enrolled in the study after taking informed consent. A 5 ml of blood sample will be taken and sent to pathology laboratory for serum creatinine levels. The estimated glomerular filtration rate will be calculated. **Results:** The minimum age of patient is 18 and maximum age is 65 year. Frequency of unrecognized renal dysfunction in patients of acute stroke is 17.4% with female dominance 72.3% and less distribution in younger age group 18 -40 year and 40 to 60 years 24.1% and 75.9% respectively. **Conclusion:** This study concluded that significant renal dysfunction is present in stroke patients and early detection will reduce morbidity.

Key Words: Renal dysfunction, stroke, prevention, creatinine

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INTRODUCTION

Renal insufficiency is a strong predictor of adverse outcomes in patients with various cardiovascular conditions. [1,2] A significant proportion of patients with serum creatinine levels slightly above the upper limit of the normal range or even within the normal range have impaired renal function.[3] It was clearly demonstrated that among patients with apparently no renal disease presenting to the hospital with acute stroke, up to 20% will be found to have renal dysfunction and have increased mortality risk.

In a study conducted in Israel among patients of stroke, it was seen that 70.5% had normal renal function 19.1% had recognized renal insufficiency, and 10.4% had unrecognized renal insufficiency. The Rationale of my study is to determine the frequency of unrecognized renal dysfunctions in patients with stroke [4].

The development of the urinary system beings as a part of prenatal development, and relates to the development of both the urinary system and the sex organs. It continues as a part of sexual differentiation.

The urinary and reproductive organs are developed from the intermediate mesoderm. The permanent organs of the adult are preceded by a set of structures which are purely embryonic, and which with the exception of the ducts disappear almost entirely before birth [5].

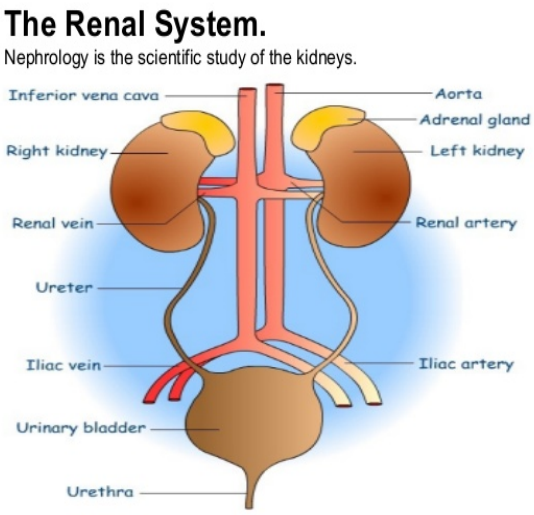

Figure 01 - Structure of the renal system

Objectives of the study

The objective of this study is:

- To determine the frequency of unrecognized renal dysfunctions in patients with stroke presenting to the tertiary care hospital.

Methodology of the study

This cross sectional study was conducted at Medical unit II Jinnah hospital Lahore from 10th January to 9th July 2018. Total 224 patients fulfilling the inclusion criteria will be enrolled in the study after taking informed consent. A 5 ml of blood sample will be taken and sent to pathology laboratory for serum creatinine levels. The estimated glomerular filtration rate will be calculated.

Inclusion criteria

- Patients with acute stroke will be enrolled in the study
- Patients 18-65 years of age
- Either gender

Exclusion criteria

- Patients with having GCS < 5/15
- Patients already known for having renal dysfunction determined on history and medical record
- Patients having lipid dysfunction determined on history and medical record.
- Patients not willing to participate in the disease

Data Collection Procedure

224 patients fulfilling the inclusion criteria will be enrolled in the study from Department of Medicine, Jinnah Hospital Lahore. Informed consent will be obtained from each patient. Demographic details (name, age and gender) will also be noted in a proforma. A 5 ml of blood sample will be taken using aseptic measure and will be sent to pathology laboratory of Jinnah hospital Lahore for measurement of serum creatinine levels. The estimated glomerular filtration rate will be calculated using the simplified Modification of Diet in Renal Disease formula as per operational definition and will be recorded in the proforma. Confidentiality of the data will be ensured.

Data Analysis

The data will be entered and analyzed through SPSS version 22. Mean and SD will be calculated for quantitative variables like age. Frequency and percentage will be given for qualitative variables like gender, renal dysfunction. Data will be stratified for age, gender, presence of hypertension (BO >160/90mmHg), diabetes (BSR >200mg/dl) and smoking status (>5 pack year). Post stratification chi square test with will be used and p-value ≤ 0.05 will be considered as significant.

RESULTS

In our study total 224 patients were enrolled mean age was 47.7± 10 years with minimum age of 18 years and maximum age of 65 years (Table 1).

TABLE NO.1: Age distribution of sampled population **(**n=224)

Mean	Std. Deviation	Minimum	Maximum
47.79	10.80	18	65

Lesser patients belong to younger age group (18 years to 40 years) i.e. 54 while 170 belonged to elder age group i.e. 41 year to 65 years 24.1 % and 75.9% respectively. Out of which 62 (27.7 %) were male and 162(72.3%) were female (Table No. 2).

TABLE NO 2: Age stratification of sampled population

Age	Frequency	Percentage
20 - 40 years	54	24.1%
41 - 65 years	170	75.9%
Total	224	100.0%

Male to female ratio was 1:3. Unrecognized renal dysfunction was present in 39 patients (17.4%) (Table 6).

TABLE No 3: Frequency of unrecognized renal dysfunction in stroke patients

Renal Dysfunction	Frequency	Percentage
Yes	39	17.4%
No	185	82.6%
Total	224	100.0%

Hypertension was present in 124 patients, smoking was present in 112 patients and 50 patients were diabetic (Table 4).

TABLE NO 4: Frequency of risk factor in sampled population (n = 224)

Risk factors	Frequency	Percentage
Hypertension	124	55.4%
Smoking	112	50.0%
Diabetes	50	22.3%

Data was cross tabulated for hypertension having p value 0.00 which is significant (Table 5).

TABLE NO 5: Cross tabulation between renal dysfunction and hypertension (n=224)

HYPERTENSION	Renal Dysfunction		Total	Chi square test
	Yes	No		
Yes	32	88	120	
	82.0%	47.5 %	53.5%	
No	7	97	104	X^2= 15.3 P =.000
	18.0%	52.5 %	46.5%	
Total	39	185	224	
	100.0%	100.0 %	100.0 %	

DISCUSSION

Acute stroke is a debilating condition which has significant morbidity as well as mortality and various factors affect the outcome of patient. One to them is unrecognized renal dysfunction which lack local data. Despite having no symptoms patient may be suffering from underlying unrecognized renal dysfunction. It may cause death in acute stroke patients if not recognized timely.In our study total patients were 224. The mean age was 47.7± 10 years with minimum age of 18 years and maximum age of 65 years [6]. It shows that this condition is prevalent in all age groups and this risk increase with increasing age as in our study elder age group contain 75.9 % patients as compared to 24.1 % patients in younger age group i.e, 18 to 40 years. The mean age of our population much less than in international studies, a study conducted by Greece clinician shows mean age of 71.1 ± 11 year [7]. This difference can be due to various risk factor in our population such as low life expectancy and late seeking medical attention while in western countries the life expectancy and medical resources are better than our setup. For example, in Canada >70% of hospitalized stroke patients were ≥70 years of age and over one third were >80 years**.** The number of female patient is greater than male patients making 72.3% female patients with acute stroke and 27.7% male patients [8]. This large number may be attributed to more population of females as compared to male patients and lack of medical facilities to prevent this disabling disease. This result is also variable with international studies like in Greece study the unrecognized renal dysfunction is more common in male i.e. 52.1 % while in another international study in China published in 2017 total 951 consecutive patients with acute stroke were treated at three hospitals in Tianjin, China, from January 2006 to September 2014 were enrolled. Information regarding stroke subtype, severity, risk factors, and outcomes (mortality, dependency, and recurrence) at 3, 12, and 36 months after stroke was recorded [9]. The prevalence was higher in women than in men (11.3 vs. 6.9%, $P < 0.001$). Women were more likely than men to have severe stroke (38.8 vs. 29.5%, $P < 0.001$).

The frequency of unrecognized renal dysfunction in our study came out to be 17.4 % which shows that it is not so un-common and should be considered in all patients of acute strike as early reorganization and intervention can improve outcome and prevent morbidity and mortality. The results are consistent with international data [10]. The available data shows 25.6% unrecognized renal dysfunction and 2.5% recognized renal dysfunction while rest of patients were having mo renal dysfunction [11].Mild renal insufficiency is increasingly recognized as an independent risk factor for cardiovascular disease in another study the patient exhibited 1.54-fold hazard ratios (95% CI 1.13 to 2.09) of incident acute stroke in another international study the unrecognized renal dysfunction was found in 10 % and recognized renal dysfunction was found in 19%. These studies strength results of our study [12].

CONCLUSION

Unrecognized renal dysfunction is a major poor prognostic factor associated with unfavorable outcome in patients of acute stroke. It is commonly present in stroke patients can further increase the morbidity and mortality in already at risk patients. Early detection and prompt treatment can prevent the further renal damage in patient by avoiding nephrotoxic drugs and maintaining proper hydration and hence can improve the quality of life and prevent from misery of disease.

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PROFORMA

Frequency of unrecognized renal dysfunctions in patients with stroke presenting to a tertiary care hospital

Case no:_____Reg#:_____Date:_____
Name:_____
Age:_____ Gender:_____

Presence of Hypertension	Yes	☐	No	☐
Presence of Diabetes	Yes	☐	No	☐
Smoking Status	Yes	☐	No	☐

Serum creatinine level: _____

Presence of renal dysfunction: Yes ☐ No ☐