VARIATIONINRENALPARAMETERSINDENGUEAND NON-DENGUE PATIENTS

Abstract

Background: Dengue virus infection (DVI) is a vector-transmitted illness that is widespread in tropical and subtropical regions .DVI has been linked to numerous renal completely such as proteinuria, glomerulonephritis, and acute kidney injury (AKI), which have been documented to occur concurrently with or immediately following acute dengue infection. The purpose of the study was the variation in renal parameters in dengue and non-dengue patients.

Methods: Theretrospectivestudyconductedat coopertive hospital vadakara ,kerala Total 100 subjects (50 dengue patients and Non dengue patients).All dengue patientswereidentifiedbyregistrationnumberusinghospitalrecordmanagementsystem.
Patients admitted with primary and confirmed diagnosis of DVI, irrespective of severity were included in this study. The investigation of the study was to compare urea, uric acid, creatinine, and serum electrolyte levels in dengue patients and non-dengue patients. The analysis was performed within 24 hours after collection with the help of ABBOTT ARCHITECT 4100 Analyzer.

Results: In this study 100subjects were taken; 50were selected as dengue patients and 50 were selected as non dengue patients. It has drastically expanded urea and creatinine in dengue patients compared with non dengue sufferers. Serum electrolytes showed slightly decreased in dengue patients compared with non-dengue sufferers

Conclusion: The observed change in creatinine and urea increases in dengue patients compared to non-dengue patients. Sodium, potassium and chloride are almost reduced in dengue patients compared to non-dengue patients. Therefore, we can predict acute kidney injury by evaluating the kidney characteristics of dengue patients.

Keywords: Acute kidney injury ,DF or DHF/DSS,thrombocytopenia.

1.INTRODUCTION

Dengue viral infection(DVI) is a mosquito-borne contamination especially normal in the tropics and subtropics and is taken into consideration a prime worldwide fitnesshazard by means of the sector healthenterprise (WHO). approximately one-third of the world's population is atrisk for dengue infection [1]. the global infection rate procedures 50-100million each year

The dengue virus is an RNA virus from the genus Flaviviridae which is transmitted by the bite of Aedcs aegypti mosquito. There arefour serotypes of dengue virus; infection with one serotype produces lifelong immunity to that serotype, but the immunity lasts only afew months for other serotypes.

The dengue virus has an incubation length of 3-14[2] days. DVI is manifested by way of a ramificationofscientificdisplayssuchasasymptomatic contamination, undifferentiatedfever,denguefever(DF), dengue hemorrhagic fever (DHF), and existence-threatening dengue shock syndrome (DSS). Like other tropical infections, DVI is related to multiple organ dysfunction involvingliver,musculartissues,coronaryheart, brain, and kidneys.[3],[4]

DVI has been related to a variety of renal manifestations which includes proteinuria, hematuria, glomerulonephritis, and acute kidney harm (MU), which have beensuggested at some stage in or quickly after acute dengue infection, The occurrence of the above renal manifestations varies among 17% and 62%in sufferers with DV1[5]

Acute Renal Failure (RF) is a unprecedented however nicely known problem of Dengue infection . that is a retrospective take a look at on versions in one of a kind renal parameters in dengue patients.[6]

2. MATERIALSAND METHODS

This was a retrospective study with across-sectional design. Study conducted at vadakara,cooperative,hospital,vadakara.
The data was analyzed between October 2023 to December 2023.Total 100 subjects(50Denguepatientsand50 Non-dengue patients).

Inclusion criteria; Patients of every age group were included. Both male andfemale who are examined Suspected DVI cases were diagnosed by using at least one ofthefollowingcriteria:1. Positive reverse transcriptase polymerase chain reaction. 2.Presence of dengue immunoglobulin M and G antibodies in acute-phase serum by enzyme-linked immunosorbent assay. The serum samples were also tested for dengue-specific NS1 antigen.The analysis was performed within 24 hours after collection with the help of ABBOTT ARCHITECT 4100 Analyzer.

StatisticalAnalysis

The collected data were summarized by using the Descriptive Statistics:frequency, mean and S.D. The Independent sample “t” test was used to compare urea, uric acid, creatinine and serum electrolytes between dengue and non-dengue cases. The “t” test was usedto compare urea ,uric acid
,creatinine and serum electrolytes according to gender. The p value < 0.05 was considered as significant. Data were analyzed by using the SPSS software (SPSS Inc.; Chicago, IL) version 29.0.10.

1. RESULTSANDDISCUSSION

Table – 1: Level of urea ,uric acid ,creatinine and serum electrolytes in dengue and non dengue patients

PARAMETER	DENGUEPATIENT	NON-DENGUE PATIENTS
SODIUM(mEq/l)	130.45	139.05
POTASSIUM(mEq/l)	3.27	3.98
CHLORIDE(mEq/l)	92.88	102.06
UREA(mg/dl)	68.78	23.14
URICACID(mg/dl)	5.48	5.44
CREATININE(mg/dl)	2.41	0.83

Table1shows that sodium, potassium and chloride are slightly decreased indengue patients compared to non-dengue patients. Urea and creatinine levels are significantly increased in dengue patients compared to non-dengue patients. The levels of uric acid did not show a significant change between the two groups..

Table 2: Comparison of urea, uric acid, creatinine and serum electrolytes between dengue and non-dengue cases

		Mean	S.D.	"t"	pvalue
Urea(mg/dl)	Denguepatients	68.78	35.70	7.43	<0.001*
	NonDenguepatients	23.14	6.95		
Creatinine(mg/dl)	Denguepatients	2.41	1.78	5.64	<0.001*
	NonDenguepatients	0.83	0.20		
Uricacid(mg/dl)	Denguepatients	5.48	2.26	0.08	0.940
	NonDenguepatients	5.44	1.14		
Sodium(mEq/l)	Denguepatients	130.45	4.16	-11.82	<0.001*
	NonDenguepatients	139.05	2.39		
Potassium(mEq/l)	Denguepatients	3.27	0.46	-7.28	<0.001*
	NonDenguepatients	3.98	0.43		
Chloride(mEq/l)	Denguepatients	92.88	4.54	-9.43	<0.001*
	NonDenguepatients	102.06	2.85		

("t"=Independentsample"t"test;*Significant)

The Independent sample "t" test was used to compare urea, uric acid, creatinine and serum electrolytes between dengue and non-dengue cases. There was a difference ($p < 0.05$) in urea, creatinine and serum electrolytes between dengue and non-dengue cases. [Table – 2]

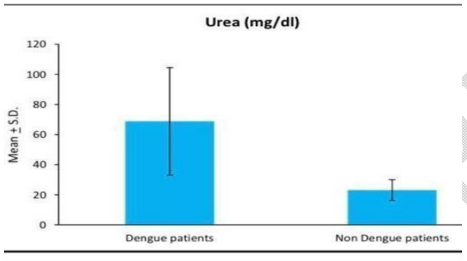
Table3:Comparisonofurea,uricacid,creatinineandserumelectrolytesaccordingtogender

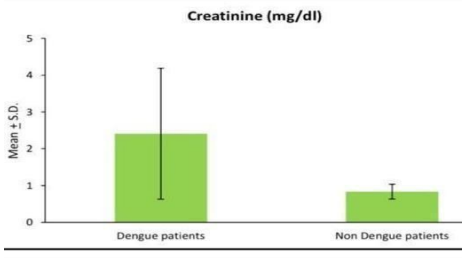
		Mean	S.D.	"t"	pvalue
Urea(mg/dl)	Male	52.92	39.17	2.25	0.027*
	Female	33.96	17.62		
Creatinine(mg/dl)	Male	2.08	1.73	3.75	<0.001*
	Female	0.90	0.37		
Uricacid(mg/dl)	Male	5.78	1.90	1.99	0.051
	Female	4.86	1.22		
Sodium(mEq/l)	Male	135.21	5.30	0.77	0.444
	Female	134.27	5.76		
Potassium(mEq/l)	Male	3.64	0.52	-0.09	0.930
	Female	3.65	0.64		
Chloride(mEq/l)	Male	97.94	5.68	-0.26	0.794
	Female	98.36	6.25		

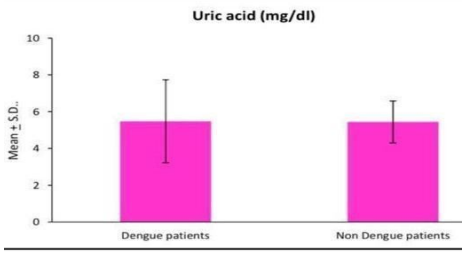
("t" =Independent sample"t" test;* Significant)

The Independent sample "t" test was used to compare urea, uric acid, creatinine and serum electrolytes according to gender. There was a difference ($p < 0.05$) in urea as well as creatinine between males and females. [Table – 3]

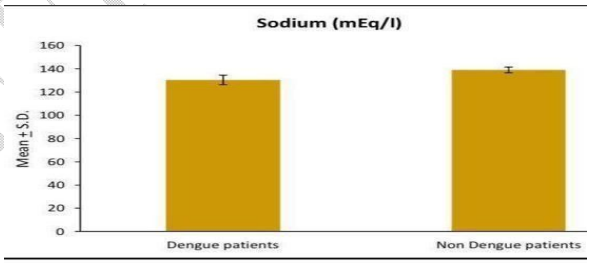
Graph 1: Graph shows the comparison between urea ,creatinine ,uric acid in dengue and non dengue patients.

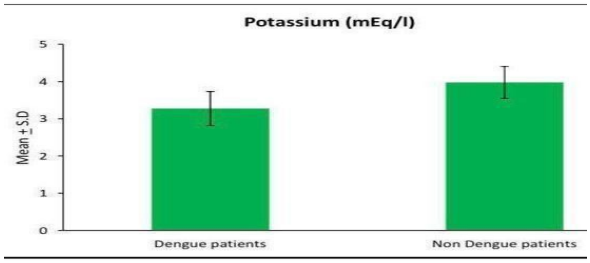


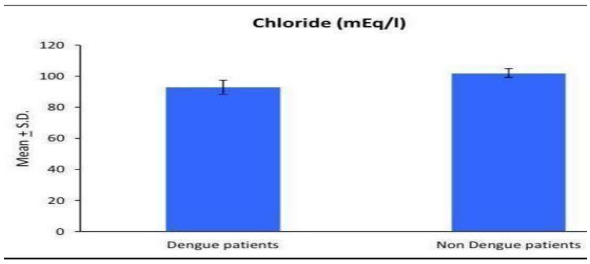




Graph 2 : Graph shows the comparisonbetweenserum electrolytes in dengue and non denguepatient







From the graph It is clearly seen that the mean increase in urea and creatinine is significantly higher in dengue patients than in non-dengue patients. Uric acid ranges confirmed that there was no significant trade between the two organizations.

Table 2 and graph number 1 definitely show that there was a difference ($p < 0.05$) between urea, creatinine in dengue cases..

The graph clearly shows that the mean sodium, potassium and chloride concentrations of dengue patients are slightly decreased comparedtonon-denguepatients.

Table 2 and graph number 2 clearly show that there was a difference ($p < 0.05$) in sodium, potassium and chloride between dengue and non-dengue cases

2. Discussion

The retrospective study evaluated variousrenal parameters in dengue patients compared to non-dengue patients. Out of 100 samples collected, 50 were from dengue patients and50 were from non-dengue patients. Creatinine and urea levels were significantly higher in dengue patients than non-dengue patients. Sodium, potassium, and chloride levels were slightly lower in dengue patients compared to non-dengue patients. Uric acid levels did not significantlydifferbetweendengueandnon-dengue patients. A previous study onrenalmanifestationsofdengueviral infections by Mahesh Eswarappa et al. (2019) found that AKI (acute kidney injury) is a complicationofdengueinfection.The findings of my study align with previous research published in the Journal of Clinical and Diagnostic Research on "Acute Renal Failure in Dengue Infection." That studyfound that acute renal failure in dengue infection is typically caused by extensive capillary leakage, hypotension, rhabdomyolysis, hemolysis, and severe disseminated intravascular coagulation. These factors lead to hypoxia, ischemia, andmultiple organ dysfunction, as noted across various case reports. In some patients, acute tubular necrosis with interstitial edema and mononuclear cell infiltration can also contribute to renal failure. The exact mechanisms by which dengue virusdirectly damages the kidneys, even in dengue fever patients without bleeding or hypotension, remains unclear. Similarly, a study by Karlo J Lizarragal and Ali Nayer on "Dengue- Associated Kidney Disease" found proteinuria in up to 74% of patients with dengue hemorrhagic fever. They described a 22-year-old woman with confirmed dengue infection who initially had a serum creatinine of 1.0 mg/dL.

3. Conclusion

The study examined the differences inrenal parameters between dengue patients and non- dengue patients. It was observed that creatinine and urea levels were higher indenguepatientscomparedto non-dengue patients. sodium, potassium, and chloride levels were slightly lower in dengue patients than in non-denguepatients. Uric acid levels showed no significant change between the two groups. In conclusion, the study suggests that renal complications from dengue infections are generally mild. However, some patients may experience more severe renal damage, potentially resulting in acute renal failure. This highlights acute renal failure as a possiblecomplication of dengueinfections. By assessing renal functiontests in dengue

patients, it may be possible to predict the development of acute kidney injury.

Informedconsent

Written informed consent was taken fromeach participant before enrollment.

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