Original Article

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Assessment of Clinical Profile and Management of Dengue Cases in Tertiary Care Centre

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Abstract

Background: To assess clinical profile and management of dengue cases in tertiary care centre. **Subjects and Methods:** 108 patients of dengue fever of both genders were included. Clinical features were recorded. Serological profiling of dengue for NS-1 AG was performed by dengue NS-1 kit. Management was recorded. **Results:** Platelet cell count <50000/µl was seen in 17, 50000-100000/µl in 20, 100000-150000 /µl in 45 and >150000 /µl in 26 patients. White blood cell count 2500/µl was seen in 27, 2500-3500 in 13, 3500-4500 in 40 and 4500-5500 in 28. Dengue‑specific marker identified were NS1Ag in 65, IgM in 18, IgG in 13 and IgM+IgG in 12 cases. The difference was significant (P< 0.05). Agents used for the management of dengue cases was chloroquine in 10, corticosteroids in 20, balapiravir in 12 and blood transfusion in 56 cases. The difference was significant (P< 0.05). **Conclusion:** Most of dengue fever patients had low platelet and white blood cell count. Agents used for the management of dengue cases were chloroquine, corticosteroids, balapiravir and blood transfusion.

Keywords: arbovirus, dengue fever, haemorrhagic fever.

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Introduction

Dengue is an acute infection characterized by fever, headache, muscle and joint pains, rash, nausea and vomiting.[1] Dengue infections may also be asymptomatic or may lead to "classical" Dengue fever (DF), or Dengue hemorrhagic fever (DHF) without shock, or Dengue hemorrhagic fever (DHF) with shock. It is caused by an arbovirus and spread by Aedes mosquitoes.[2] Dengue is caused by one of the four serotypes of the dengue virus (DEN-1, DEN-2, DEN-3 and DEN-4) also referred to as an arbovirus (arthropod-borne viruses) that belongs to the genus Flavivirus of the family Flaviviridae. Transmission to humans occurs by the bite of the female Aedes aegypti mosquito infected by one of four serotypes of the virus. This mosquito, a domestic species adapted to urban conditions, is the main vector.[3]

Approximately half of the world's population is at risk, especially people residing in tropical and subtropical climates.[4] Dengue infection is a major challenge to public health, especially in South-East Asia for several years. Rapid urbanization, globalization, increasing population, poor solid waste, and water management have given rise to new habitats for mosquito breeding thereby increasing the number of cases and deaths.[5] The identification of dengue cases is possible by distinct clinical features. Studies describe that atypical manifestations in dengue fever are multisystemic and multifaceted with organ involvement, such as liver, brain, heart, kidney, and central nervous system.[6] Considering this, we planned this study to assess clinical profile and management of dengue cases in a tertiary care centre.

Subjects and Methods

A sum total of one hundred eight patients of dengue fever of either genders presenting to a tertiary care centre were enrolled. Ethical clearance for the conduction of the study was obtained from concerned authority. With the written consent from all patients, we started the study.

Parameters related to patients such as name, age, gender, address, reporting time etc. were entered in case sheet. A thorough general and systemic examination was carried out. Clinical features were recorded. 5 ml of venous blood samples were aseptically collected in gel vacuities. The blood serum was properly separated by centrifugation at 1000 g for 5 minutes. Serological profiling of dengue for NS-1 AG was performed by dengue NS-1 kit. Test results were interpreted at 15-20 minutes. If the patient is affected by dengue virus, a purple colour moves across the result window in the centre of the test device. Management was recorded. Results of the study were compiled and spread in excel sheet. Data was analysed using SPSS version 21.0. Mann Whitney U test was performed for statistical analysis. P value less than 0.05 was considered significant.

Results

Table I Distribution of patients

Total- 108		
Gender	Male	Female
Number (%)	46 (42.6%)	62 (57.4%)

Out of 108 patients, males were 46 (42.6%) and females were 62 (57.4%) (Table I).

Table II Assessment of clinical profile

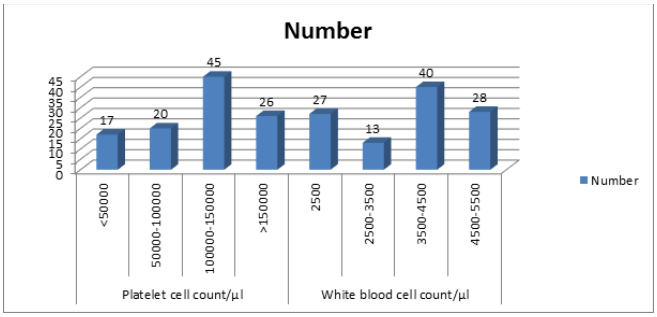
Clinical profile	Number	P value
Fever	97%	0.74
Myalgia	78%	
Headache	81%	
Nausea/vomiting	45%	
Joint pain	32%	
Dry cough	25%	
Abdominal pain	13%	
Diarrhea	9%	
Retro-orbital pain	3%	

Clinical features comprised of fever in 97%, myalgia in 78%, headache in 81%, nausea/vomiting in 45%, joint pain in 32%, dry cough in 25%, abdominal pain in 13%, diarrhea in 9% and retro-orbital pain in 3%. A non-significant difference was observed (Table II).

Table III Dengue infection according to platelet cell count and white blood cell count

Parameters	Variables	Number	P value
Platelet cell count/µl	<50000	17	0.05
	50000-100000	20	
	100000-150000	45	
	>150000	26	
White blood cell count/µl	2500	27	0.54
	2500-3500	13	
	3500-4500	40	
	4500-5500	28	

Platelet cell count <50000/µl was seen in 17, 50000-100000/µl in 20, 100000-150000 /µl in 45 and >150000 /µl in 26 patients. White blood cell count 2500/µl was seen in 27, 2500-3500 in 13, 3500-4500 in 40 and 4500-5500 in 28. The difference was significant (P< 0.05) (Table III, graph I).



Graph I Dengue infection according to platelet cell count and white blood cell count

Table IV Serological marker distribution

Dengue-specific marker	Number	P value
NS1Ag	65	0.05
IgM	18	
IgG	13	
IgM+IgG	12	

Dengue-specific marker identified were NS1Ag in 65, IgM in 18, IgG in 13 and IgM+IgG in 12 cases. The difference was significant (P< 0.05) (Table IV).

Table V Management of cases

Agent used	Number	P value
Chloroquine	10	0.04
Corticosteroids	20	
Balapiravir	12	
Blood transfusion	56	

Agents used for the management of dengue cases was chloroquine in 10, corticosteroids in 20, balapiravir in 12 and blood transfusion in 56 cases. The difference was significant (P< 0.05) (Table V).

Discussion

For an accurate diagnosis of dengue infection, specific laboratory tests are necessary. Serological, costly molecular methods (RT-PCR) and laborious virus isolation are performed to diagnose the specific dengue fever. For detecting dengue, the NS1 antigen (NS1 Ag) test is one of the most regular tests in clinical practice.[7] For viral translation, transcription, and replication, non- structural proteins are involved. The NS1 protein antigen is involved in viral RNA replication among these proteins. Without forming part of the virion, NS1 is expressed on the surface of infected cells.[8] Secreted NS1 serum level positively correlates with viral titres and are tremendous ways in dengue diagnosis. For promoting the early diagnosis of dengue, thrombocytopenia and leukopenia serve as a predictive marker. The platelet count is the only accessory laboratory test which can support diagnosis of DHF or DSS.[9] This study assessed clinical profile and management of dengue cases in a tertiary care centre.

There were 46 (42.6%) males and 62 (57.4%) females. Clinical features comprised of fever in 97%, myalgia in 78%, headache in 81%, nausea/vomiting in 45%, joint pain in 32%, dry cough in 25%, abdominal pain in 13%, diarrhea in 9% and retro-orbital pain in 3%. Islam et al10 found that total number of cases was 98. Out of them 62 (63.2%) were male and 36 (36.73%) were female. Fever was most common (100%) manifestation and duration of fever ranged from 5 to 8 days with a mean duration of 6.3 (± 1.0) days. Among other symptoms generalized body ache was most common (63, 64.3%). Generalized weakness was present in 60 cases (61.2% cases) Bleeding manifestations was present in 41 cases; abdominal manifestations were found in 11 cases. Blood for NSI was positive in 94 (95.9%) cases; most

cases (71, 72.4%) became positive between 2nd to 4th day. Ninety (91.9%) cases developed thrombocylopcnia and it started at 5th day in 45 (45.9%) cases. Blood transfusion was given in 12 (12.2%) cases & Platelet transfusion was given in 3 (3.1%) cases. Complete recovery was in 96 (98%) cases and Death occurred in 2 (2.0%) cases.

Platelet cell count <50000/µl was seen in 17, 50000-100000/µl in 20, 100000-150000 /µl in 45 and >150000 /µl in 26 patients. White blood cell count 2500/µl was seen in 27, 2500-3500 in 13, 3500-4500 in 40 and 4500-5500 in 28. Azin et al[11] studied 154 patients with clinical and serological diagnoses of dengue fever were allocated to two groups according to age: under 15 years old (n = 66) and 15 years or older (n = 88). The main laboratory abnormalities found in dengue hemorrhagic fever were thrombocytopenia, hemoconcentration and elevated transaminases, similar to severe dengue with the exception of hemoconcentration. Most laboratory abnormalities started on the 3rd day but were more evident on the 5th day with restoration of values by the 11th day; this was more prominent in under 15-years-old and with the more severe clinical forms.

Dengue‑specific marker identified were NS1Ag in 65, IgM in 18, IgG in 13 and IgM+IgG in 12 cases. Agents used for the management of dengue cases was chloroquine in 10, corticosteroids in 20, balapiravir in 12 and blood transfusion in 56 cases. Abedin et al[12] in their study 67 samples were diagnosed as positive. Seroprevalence of dengue was 26.30%. It was seen that the >40 years of age group had the maximum unit of cases having low platelet count followed by 21-30years and it was also seen that 21-30 years of age group had the maximum range of cases having low WBC count followed by above 40years of age group. Chaloemwong J et al[13] in their study 154 dengue and 146 control patients were included. The dengue group had higher hemoglobin and hematocrit from day 3 to day 10, lower white blood cell count from day 1 to day 10, lower platelet count from day 3 to day 10, higher monocyte on day 1–4, higher atypical lymphocyte percentage on day 5–9 and higher eosinophil percentage on day 9–10.

Conclusion

Most of dengue fever patients had low platelet and white blood cell count. Agents used for the management of dengue cases were chloroquine, corticosteroids, balapiravir and blood transfusion.

The presence of microalbuminuria is a powerful predictor of renal and cardiovascular risk in patients with Type 2 diabetes mellitus. Patients with Type 2 diabetes mellitus and associated complications such as retinopathy, neuropathy, and hypertension are at risk of developing diabetic nephropathy. Since Type 2 diabetes mellitus is slow onset disease and most of the Type 2 patients are unaware of the symptoms of diabetes mainly in rural population. Therefore, Screening for microalbuminuria is important for early detection and prevention of diabetic nephropathy.

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