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STUDY OF DENGUE FEVER PATIENTS IN TERTIARY CARE HOSPITAL IN MAHARASHTRA

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ABSTRACT

Dengue fever, an acute febrile arbo-viral disease has become a major public health problem in tropical and subtropical regions of the world especially in India, due to the morbidity and mortality it causes.[57]

There has been a considerable increase in the geographic spread, number of cases and severity of the disease in the past four decades. Dengue infection has been known to be endemic in many parts of India for over two centuries and outbreaks have been reported at regular intervals from almost all parts of India.[18]

The present study was done at Tertiary care hospital in Maharashtra .The study population comprised of 120 adult Dengue fever cases which were positive for either NS 1 or IgM ELISA or for both . Cases were selected according to inclusion criteria. Each patient underwent detailed Clinical,Serological and Biochemical examination .Out of the total study population majority of the cases occurred in Monsoon and Post Monsoon period as there is increase in number of vector for the disease, 70% cases were of age between 13 to 30 years, Fever was the most common presenting symptom, Thrombocytopenia was seen in 76.27% Male and 49.18% Female patients which was significantly higher in Males. Hepatomegaly and Tachypnoea were seen in 10% of cases.Out of the total 120 cases 34.16% cases had Dengue fever disease with warning signs and 9.16% cases had severe Dengue disease .Total 95% cases had recovered from Dengue fever and discharged.

Hemorrhagic manifestations were seen most significantly when platelet count was less than 20000 per cmm .Deranged liver enzymes was found in 30% of cases. 7.5% cases had pneumonitis, 4.16% cases had multiorgan dysfunction syndrome and 4.16% cases died.

KEY WORDS: Dengue, DHF, Thrombocytopenia, NS1

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1. INTRODUCTION

Dengue fever is a mosquito-borne tropical disease caused by the dengue virus. Dengue virus is transmitted by female mosquitoes mainly of the species Aedesaegyptiand to a lesser extent, Ae. albopictus.[1]

According to the World Health Organization (WHO) estimates, the incidence of dengue has increased 30 times over the last 50 years. Fifty million dengue infections occur worldwide annually with 500,000 cases of dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) causing around 30000 deaths.[3] Dengue is now endemic in more than 100 countries.[2] In several Asian countries, dengue is the leading cause of hospitalization and death.[4]

Dengue is an acute viral disease caused by a virus belonging to the broad group Arboviruses, family Flaviviridae, subfamily Flavivirinae and genus Flaviviruses.[5] It comprises four closely related but antigenically distinct serotypes, namely, Dengue virus-1 (DENV-1), DENV-2, DENV-3, and DENV-4.[6] Dengue virus is an enveloped positive-sense RNA(Ribonucleic acid) virus. The hexameric form of dengue virus NS1 protein is found circulating in the sera of patients during acute phase of the illness.[4]

Infection with a dengue virus may be clinically asymptomatic or may present as a non-specific febrile illness, classic dengue fever , DHF or DSS. Classic dengue fever is characterized by fever, malaise, headache, arthralgia, myalgia and rash. DHF is characterized by onset of plasma leakage, marked thrombocytopenia and bleeding diathesis. Severe plasma leakage can lead to DSS with mortality rate for untreated patients being in excess of 10%.[7] Primary DENV infections present as either a non-specific illness or dengue fever (DF). Secondary infection with a serotype different from that causing primary infection may lead to DHF or DSS.[8]

A rapid and accurate diagnosis of dengue in the acute phase of illness is important for initiation of therapy & forecasting an early warning of an epidemic and in undertaking effective vector control measures.[4, 9]

Current study includes various Clinical, Serological and Biochemical features of Dengue fever patients at Tertiary Care Hospital in Maharashtra.

2. MATERIALS & METHODS

The present study was conducted in a tertiary care hospital in the Department of Medicine after obtaining approval from the institutional Ethical Committee. The study was carried out over a period from January 2015 to Nov 2016.The written and informed consent from the patient was taken.

Study Population-

120 adult Dengue fever patients admitted at Tertiary care hospital were serially enrolled in the study.

Selection Criteria-

120 patients of age more than 12 year with clinical features suggestive of dengue fever confirmed by Dengue NS1 OR IgM ELISA were serially enrolled in study admitted at Tertiary care hospital.

Inclusion Criteria-

All the adult patient with clinical features suggestive of dengue infection confirmed by Dengue NS 1 OR IgM ELISA will be included in the study.

Exclusion Criteria-

Patient with alternate diagnosis and with mixed malarial and viral infection(Malarial fever excluded by absence of Malarial parasite on Peripheral Smear Or Negative Rapid Malarial Test

Detail Clinical History with reference to details of fever,chills,headache, bodyache,abdominal pain,vomiting,bleeding into the eyes,gum bleeding,hematuria, hematemesis,malaena. Any past history of Diabetes mellitus,Hypertension, Ischaemic heart disease,Chronic kidney disease,any other medical disease.

Thorough **Physical examination** with reference to consciousness,orientation,Pulse rate,Blood Pressure,Temperature,Respiratory rate,SPO2 by pulse oximeter, special reference to bleeding diathesis,Tourniquette test /Hess test

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Examination of Cardiovascular System- Heart sounds, Heart rate,any abnormal sounds, In Respiratory System-Breath sounds, Air flow in lung fields,Any adventitious sounds, In Abdominal examination Presence of Organomegaly,Ascites

In Central Nervous System- Level of consciousness,Orientation,Speech.

Blood was collected from 120 eligible candidate for relevant investigations like

Routine blood investigation-Hemoglobin level,Total leukocyte count,Platelet count,Blood Indices, Dengue rapid test - NS 1 and IgM ELISA, Blood Urea, Serum Creatinine, Random blood suger ,LFT.ABG in clinically suspected pneumonitis cases.

Statistical analysis

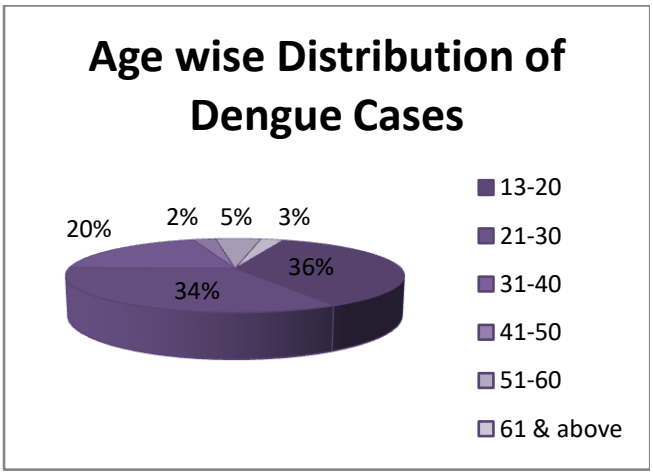
Data was analyzed by using SPSS-16 (Statistical Package for the Social Sciences) for Windows. Descriptive variable were tabulated for Mean, percentage, standard deviation. Relation and association of the variable was analyzed using chi square test for the qualitative data and t test for quantitative data. Correlation between the variable was established using Pearson's correlation test. Observations were interpreted with 'P' value < 0.05 was considered statistically significant.

3. OBSERVATIONS AND RESULTS

The present study was carried out in a tertiary care hospital during period from January 2015 to November 2016. The patients with age >12 yrs with clinical features suggestive of Dengue fever admitted at tertiary care hospital and tested positive for either NS 1 ELISA or IgM ELISA or positive for both were serially enrolled into study. Total of 120 patients were selected for the study

Age and Sex Distribution

In present study most of the patients were younger with maximum number of cases between age 13-20 yrs ,35.8% (n=43). Amongst 120 patients in study 59 (49.17%) were Males and 61 (50.83%) were Females. Male to Female ratio were 1:1.03



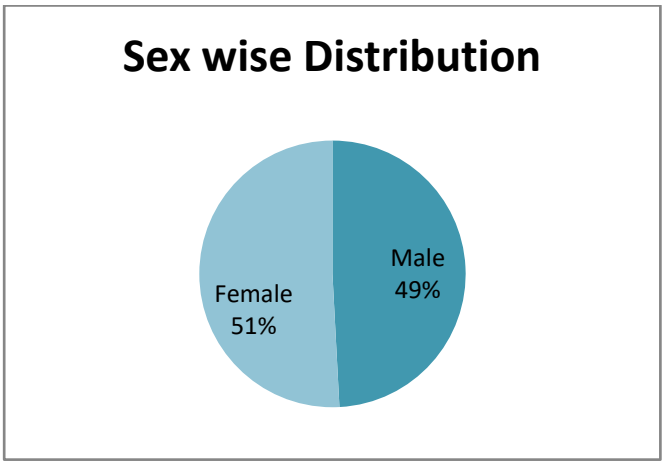


Fig. 1: Age and Sex Distribution

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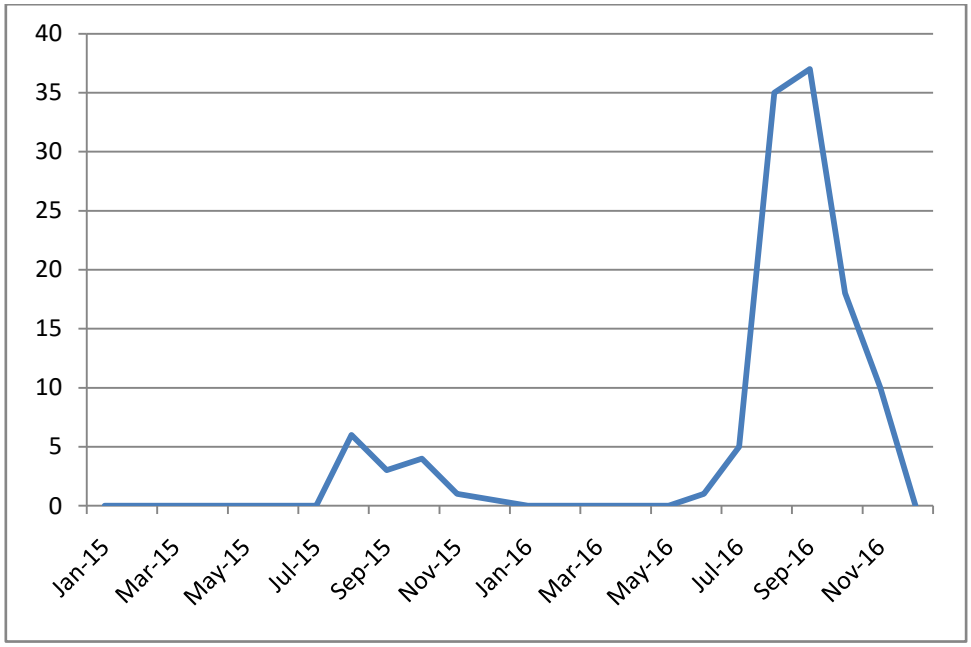

Fig 2: Month wise distribution of dengue positive cases (n=120)

In the present study, out of 120 dengue positive cases majority (83.3%) cases (N=100) occurred in the months of August to November .

Presenting Symptoms

Most common presenting symptom was Fever with chills which was present in 100% of patients, followed by Headache seen in 100(83.3%) patients, Joint pain was seen in 78(65%).

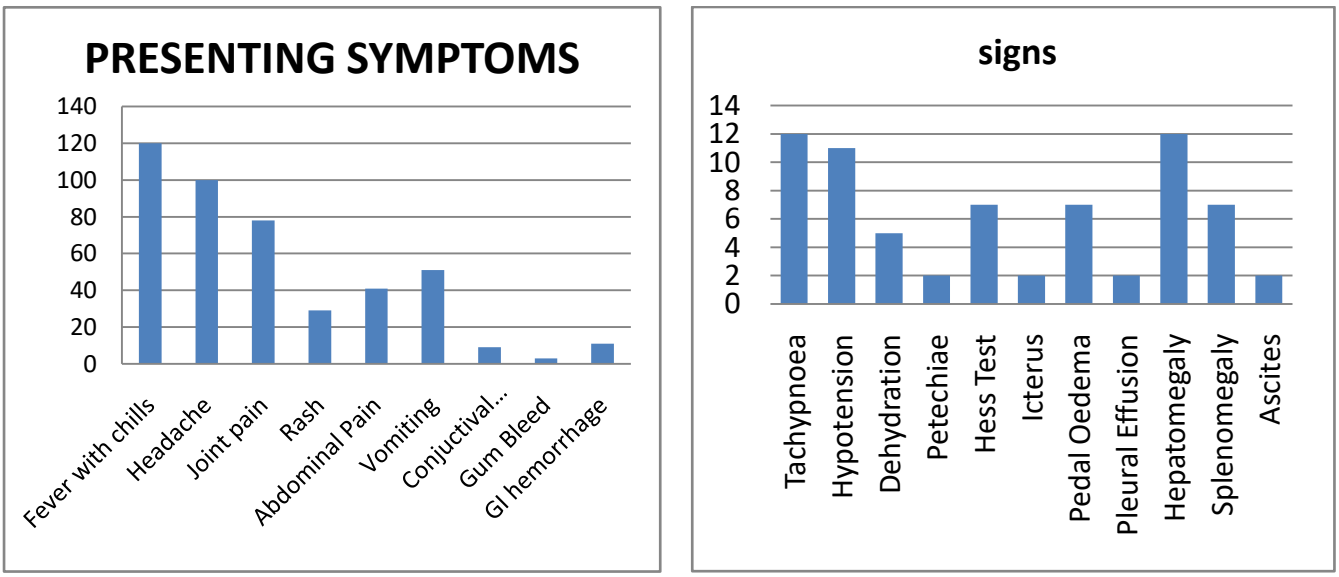

Fig 3: Presenting Symptoms In Dengue Patients

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Hepatomegaly and Tachypnoea were the commonest clinical sign, which was found in 12 cases (10%) followed by Hess Test,Pedal oedema,Splenomegaly in 07 cases (5.83%). Dehydration in 05 (4.16%) and Out of 120 dengue cases death occurred in 5(4.16%) cases.

Distribution of serologically positive dengue cases into three categories as per WHO guidelines 2009

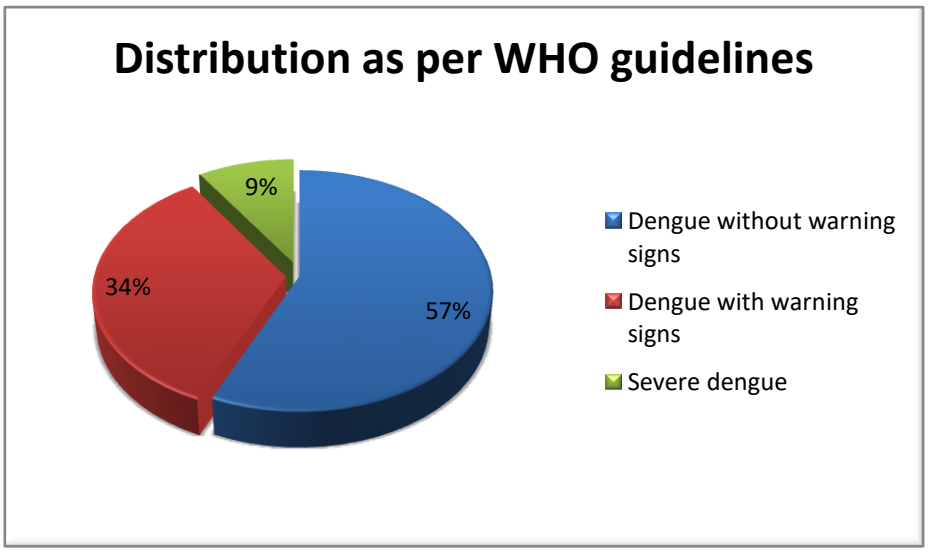

Fig 4: Distribution of Dengue cases into three categories as per WHO guidelines 2009[12] (n=120)

Majority of the cases i.e. 68 (56.66%) were having dengue fever without warning signs, 41 cases(34.16%) cases of dengue with warning signs and 11 cases (9.16%) had severe dengue
Total 4 patients have died all of them were from category severe dengue.

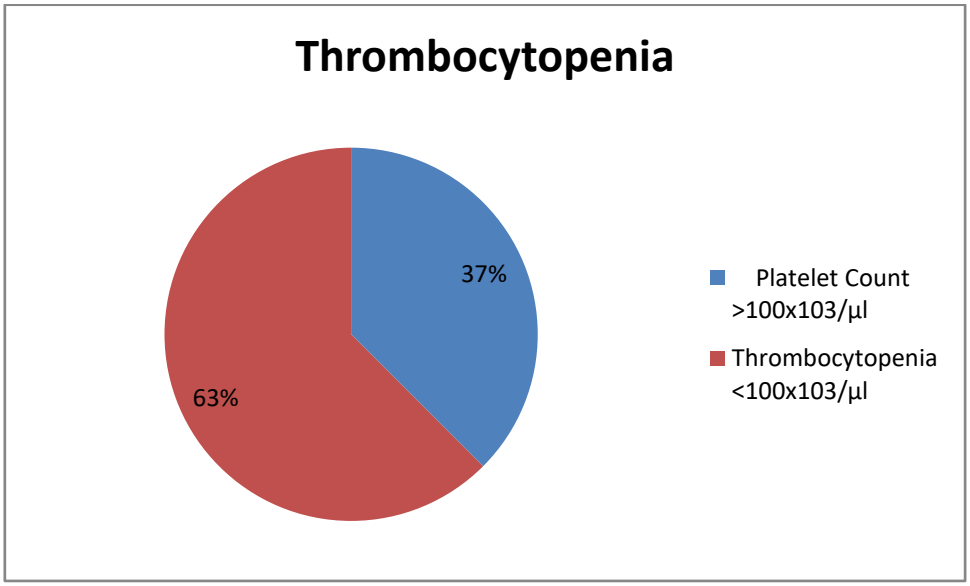

Fig 5: Platelet count in Dengue Fever Cases

Total of 120 Dengue fever patients thrombocytopenia was seen in 75(62.5%) dengue positive cases and rest 45 (37.5%) dengue positive cases had platelet count >100x10^3/µl.

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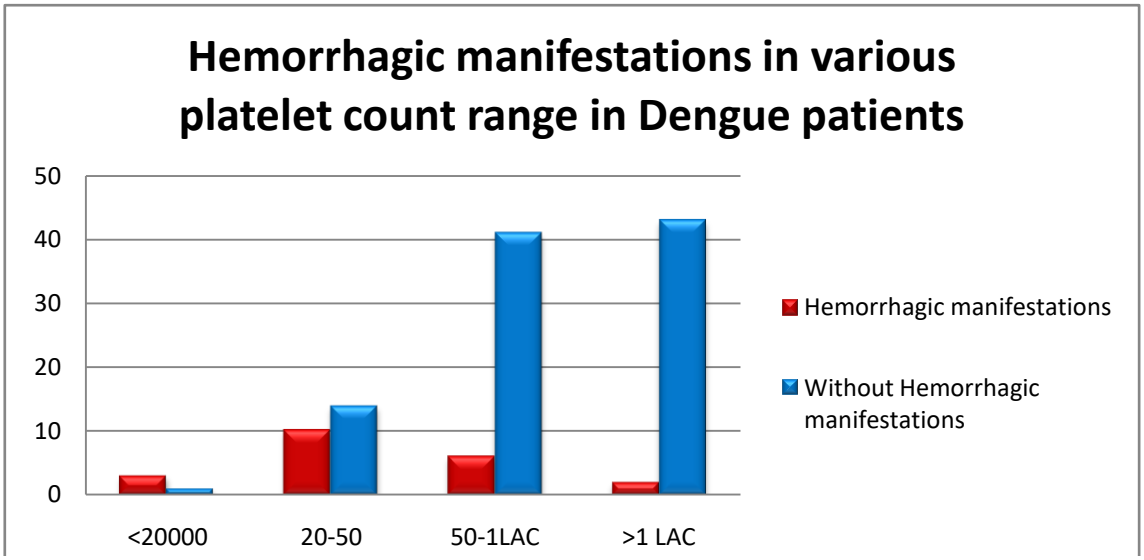

Fig 6: Showing hemorrhagic manifestations at various platelet count

In this study 75% (3 out of 4) patients with platelet count <20,000 had hemorrhagic manifestations but these manifestations were comparatively less in other platelet ranges such as 20,000-50,000(41.7%), 50,000-1 lac (12.7%) and >1lac (4.4%)

Bleeding Manifestations and Thrombocytopenia

Hemorrhagic manifestations when correlated with various platelet ranges it was found to be significant (p value-0.000555).

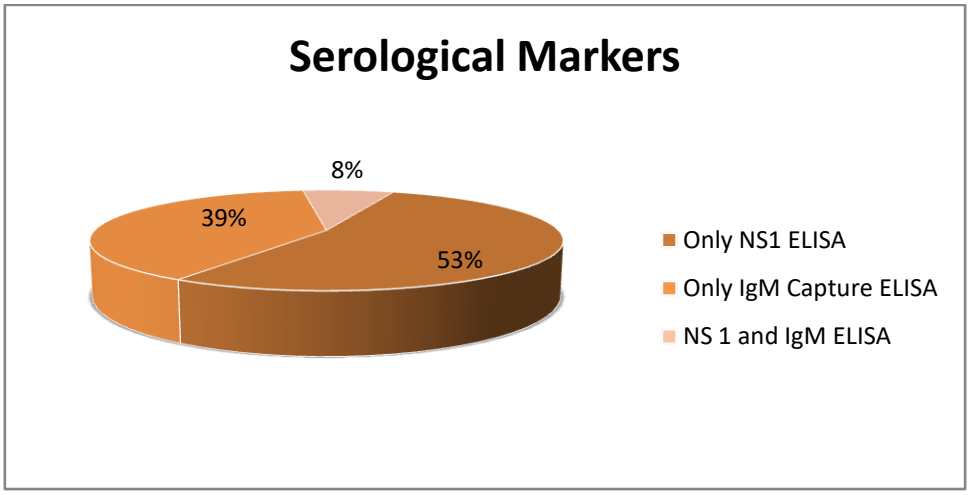

Fig 7: Serological Tests

Above table shows that out of 120 patients enrolled into study 53.3% (n=64) were positive for NS1 ELISA for NS1 Ag, 39.16% (n=47) were positive for IgM ELISA for IgMAb and 8%(n=9) were positive for both.
Thrombocytopenia when compared with different serological markers, correrlation was found to be non significant (P value- 0.549)

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Serological Markers and Bleeding Manifestations

Table 1: Serological markers and Bleeding Manifestations

	Bleeding		chi square	P value
	Yes	No		
Only NS1 +ve	11	53	0.691	0.708
Only IgM +ve	7	40		
Both	3	6		

Bleeding manifestations when compared with different serological markers, correlation was not significant.

Biochemical Derangements

Out of total patients 120, Deranged liver enzymes ,raised SGOT was found in 35 (29.16%), raised SGPT in 36(30%), Albuminuria was found in 3.3%, deranged KFT in 1.6%, Deranged blood sugar in 0.8% of patients

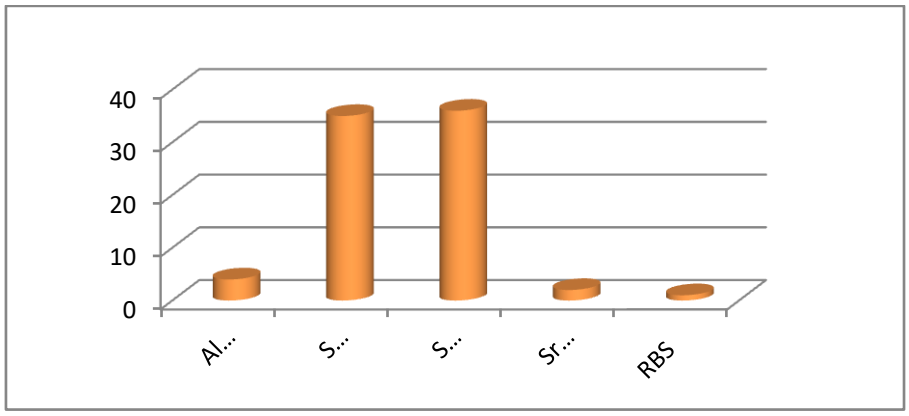

Fig 8: Biochemical Derangements in Dengue Patients

Complications

Total no. of Patients 120

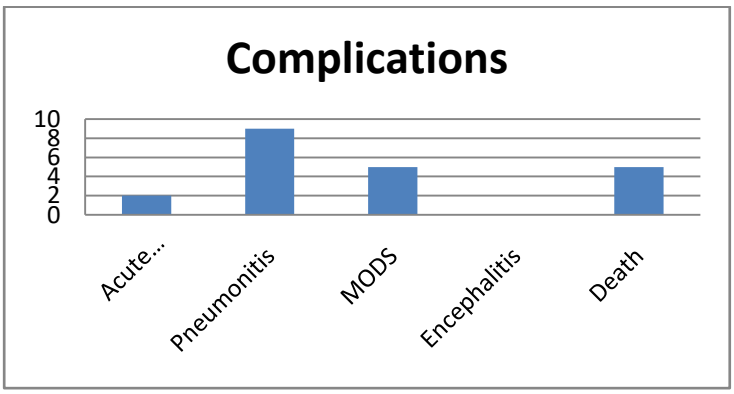

Fig. 9: Various Complications in Dengue Patients

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Pneumonitis was the most frequent complication in this study which was present in 7.5% (n=9) of patients followed by MODS & death (4.16%, 5 cases each), and acute renal failure (1.66%, n=2), none of the patients in this study had encephalitis

Outcome

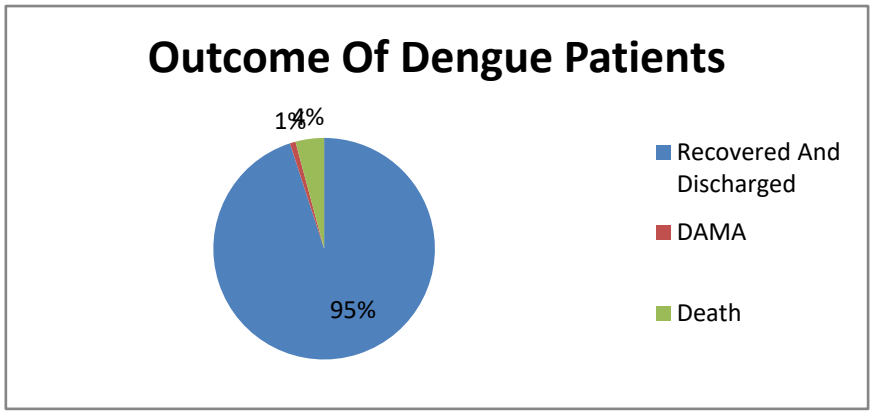

Fig. 10: Outcome In Dengue Patients

In present study out of total 120 patients 114 patients recovered and discharged, 1 patient took discharge against medical advice, and 5 patient died of Dengue fever.

4. CONCLUSION

The present study was done at Tertiary care hospital in Maharashtra .The study population was comprised of 120 adult Dengue fever cases which were positive for either NS 1 or IgM ELISA or for both of which 49.17% were male and 50.83% were female patients.Cases were selected according to inclusion criteria.Each patient underwent detailed Clinical examination, and Serological and Biochemical profile of them studied in detail.

Out of the total study population majority of the cases occurred in Monsoon and Post Monsoon period as there is increase in number of vector for the disease, 70% cases were of age between 13 to 30 years, Fever was the most common presenting symptom,Thrombocytopenia was seen in 76.27% Male and 49.18% Female patients which was significantly higher in Males.Hepatomegaly and Tachypnoeawere commonest physical sign seen in 10% of cases.

Out of the total 120 cases 34.16% cases had Dengue fever disease with warning signs and 9.16% cases had severe Dengue disease.Total 95% cases had recovered from Dengue fever and discharged.

Hemorrhagic manifestations seen most significantly when platelet count was less than 20000 per cmm .Deranged liver enzymes was found in 30% of cases.

Out of 120 total cases 7.5% cases had pneumonitis, 4.16% cases had multiorgan dysfunction syndrome and 4.16% cases was died.

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