A CLINICAL AND HAEMATO-BIOCHEMICAL PROFILE OF 100 PATIENTS OF DENGUE FEVER ADMITTED IN SHETH L.G. HOSPITAL, AHMEDABAD.

General Medicine

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ABSTRACT

BACKGROUND: Dengue is an exceedingly common Anthropod borne endemo-epidemic Arboviral infectious disease in tropical & sub tropical regions .The objective of study is to analyze & correlate clinical as well as haemato-biochemical parameters in a serologically proven dengue fever patients and to classify severity of disease.

METHODOLOGY: This is an observational, descriptive and retrospective study of 100 patients with clinical and serological diagnosis of dengue fever who were NS1 antigen/IgM dengue positive included in a study and were admitted in Sheth. L.G. hospital during 2018. The presenting clinical symptoms were fever,headache,abdominal pain,diarrhoea,skin rash,itching,seizures and the major physical findings noted were hepatomegaly,bradycardia,pleural effusion, ascites and positive tourniquet test.The tests conducted and analyzed were complete blood count, S. Protein, LFT, S.Liver enzymes, RFT, S.electrolytes and urinary R&M.

RESULTS: Thrombocytopenia, raised haemoconcentration, elevated liver enzymes ,hypoalbumienia , hyponatremia and increased urinary albumin excretion were observed in a patients of dengue fever and dengue haemmorhagic fever/dengue shock syndrome .

CONCLUSION: These tests result were relevant in assessing severity of the disease and help us to enable specific treatment form of disease. Fluid management and supportive treatment plays a major role in dengue fever patients whereas platelet transfusion and albumin correction requires in a DHF/DSS patients.

KEYWORDS

Dengue fever, DHF/DHS, thrombocytopenia, elevated liver enzymes, clinical profile, laboratory tests.

INTRODUCTION

Dengue infection is an Arboviral disease which is transmitted by infected Aedes mosquito.

The incidence of Dengue infection has grown exponentially in the last 5 decades. There are about 2.5 billion people living in dengue endemic areas worldwide 9.1 75% of the global burden is from South East Asia. There are about 50 million dengue infections in a year worldwide. Cyclic epidemics are happening in countries such as India and Bangladesh. According to WHO report,the mortality in untreated patients of dengue fever was reported to be as high as 20% while the hospitalised patients had a mortality rate <1%.

Dengue is a small single-stranded RNA virus comprising four distinct serotypes (Dengue-1 to -4). These closely related serotypes of the Dengue belong to the genus Flavivirus and family Flaviviridae. "Asian" genotypes of Dengue-2 and Dengue-3 are frequently associated with severe disease accompanying secondary dengue infections.

AIMS AND OBJECTIVES
1) To outline the demographic characteristics of the cases.
2) To correlate the clinical and heamato-biochemical profile of patients.
3) To evaluate the treatment outcome of the patients.

MATERIALS & METHODS

This study is an observational and retrospective analysis of a hundered patients who were admitted in the medical wards of LG HOSPITAL,MANINAGAR with febrile illness and diagnosed to have dengue infection by serological analysis. These were mainly adult patients and were admitted during 2018. The Presenting complaints were fever,myalgia,headache,abdominal pain and bleeding manifestations. All patients screened for this study had undergone dengue serology and only patients who were dengue IgM AND NS1 positive were included in this study. The diagnosis of dengue fever,dengue hamorrhagic fever and dengue shock syndrome was based on WHO crieteria. Written consent was taken from all patients whom taking part into study.

EXCLUSION CRIETERIA :
•   Patients with other causes for fever and with coexisting infections were excluded from this study. Patients with other tropical illnesses including malaria, typhoid, scrub typhus were excluded from this study.
•   Patients less than 10 years age.

INCLUSION CRITERIA :
•   Patients between 15 to 60 years of age.
•   Dengue IgM AND NS1 positive patients.
•   Clinical features of dengue fever.

Dengue serology was done by the ELISA method. Aminotransferases were tested by IFCC method, serum proteins were done by biuret method. Serum electrolytes (sodium, potassium and calcium) were analysed via the ISE method (Direct and indirect ion sensing electrode method).

RESULTS
Of the 100 serologically confirmed cases,88 confirmed as dengue fever,8 cases as dengue haemorrhagic fever and 4 cases as dengue shock syndrome.
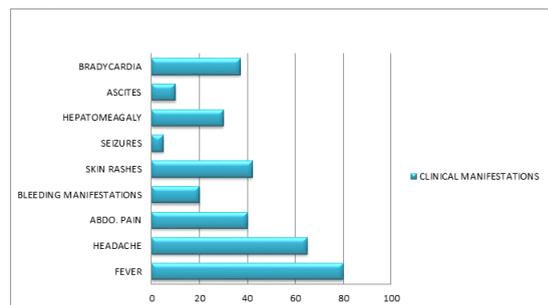

FIGURE 1.0

As the above figure 1.0 presents the clinical menifestations.
Fever was documented in 80% patients. Fever was high grade with chills.

Headache occurred in 65% patients which was associated with retroorbital pain & frontal type of headache and subside along with fever.

Bleeding manifestations(20%) of which gum bleeding seen more.

Skin rashes(42%),sinus bradycardia(37%) was noted in convalescent phase of classical dengue fever.

Ascites were detected either clinically or by ultrasound in 10% of patients,7 of whom had associated hepatomegaly.
Hepatomegaly seen in 30% patients with abdominal pain.

Seizures were elucidated in 5%of patients ,2% of whom have dengue encephalitis with classical bithalamic hyperintensity signals on T2W MRI plate.
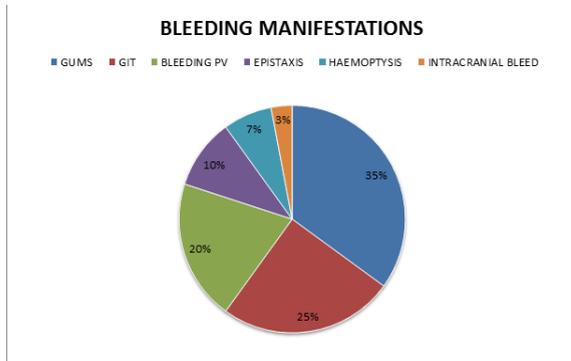

BLEEDING MANIFESTATIONS

GUMS GIT BLEEDING PV EPISTAXIS HAEMOPTYSIS INTRACRANIAL BLEED

FIGURE 2.0
Figure 2.0 shows bleeding manifestations in Dengue fever/DHF/DSS. Out of which gum bleeding was seen in highest proportion(35%). followed by GI Bleeding(25%) and Bleeding PV(20%) respectively.

TABLE 1: Age Wise Distribution Of Dengue Fever Pts.

AGE	15-20	20-40	40-60
PERCENTAGE	30%	66%	4%

66% patients are between 20-40 years.Less frequency of infection seen in old age.

TABLE 2: Sex Wise Distribution Of Dengue Fever Pts.

| SEX	MALE	FEMALE
PERCENTAGE	68%	32%

Male patients are more affected than females.Approximataly 2:1 ratio seen in male:female patients respectively.

TABLE 3 : Serological Diagnostic Tests Of Dengue Fever

TESTS	NS1 ANTIGEN	IGM ANTIBODY
PERSENTAGE	80%	20%

80% of the patients presented with fever and malaise have NS1 positive antigen.20% of patients are positive with IGM antibody.

RELATIONSHIP BETWEEN HEAMATOCRIT AND PLATELETS ON ADMISSION AND DISCHARGE.

HEMATOCRIT
PLATELETS
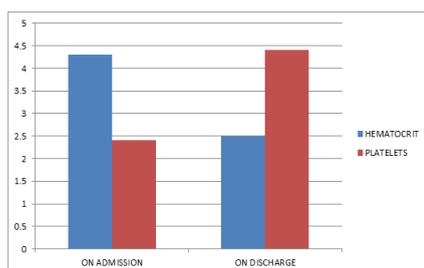
Hematocrit level is high on admission,later on it will decrese progressively after some days.

Thrombocytopenia is seen in earlier phase,later it will improve after treatment commences.

TABLE 4 : Lft Tests In Dengue Fever Pts.

	ALT LEVELS	BILIRUBIN LEVELS
NORMAL	54%	74%
HIGH	46%	26%

Most of the dengue fever pts. have normal bilirubin level with raised ALT levels.In dengue haemorrhagic fever pts. Raised bilirubin level with 2-3 fold raised ALT level.

TABLE 5 : Distributions of different ranges of serum sodium, calcium levels.

	SODIUM	CALCIUM
NORMAL	85%	90%
LOW	15%	10%

15% dengue fever pts have low serum sodium level and 10% pts. Have low serum calcium level.Most of the pts. Have potassium level within normal limits.

TABLE 6 : Distribution Of Ranges Of Urinary Albumin In Dengue Fever Pts.

U.ALBUMIN	PERCENTAGE
ABSENT	60%
+	28%
++	9%
+++	3%

Routinely, U.Albumin are normal in most of the pts. But in severity like dengue haemorrhagic fever pts. have urinary albuminuria in large amount.

Analysis of the serum creatinine levels showed that 85% had normal levels.

DISCUSSION
- Dengue fever is an exceedingly common infection of tropical countries such as India. This study describes the clinical profile, laboratory features and outcome of classical dengue fever, dengue hemorrhagic fever and dengue shock syndrome in adult patients[1].
- In our study there is increase proportion of fever,headache,gum bleeding,ascites with hepatomegaly and bradycardia than positive tourniquet test ,skin rashes,sore throat, diarrhea which was prominent clinical features in study made by Sharma et al(10).
- Some of the biochemical abnormalities in dengue include elevation of liver enzymes, hypoproteinemia due to possible third space losses and albuminuria.
- Some studies have shown changes in calcium levels especially in dengue hemorrhagic fever.
- The spectrum of hepatic involvement in Dengue infection varies from mild involvement to fulminant hepatitis[3].
- In our study, 54% of patients had normal values of transaminases, 46% had values between 1-3-fold elevation. Liver involvement is thought to be due to an inflammatory process in the hepatic parenchyma. None of these patients had underlying liver disease[2].
- In our study calcium was low in 10% of patients. Low ionized calcium levels were a marker of plasma leakage and that hypocalcemia was usually transient[4].
- Serum proteins were reduced in 12% of patients and serum albumin was reduced in 8% of patients. It is believed that a low serum albumin may be an indicator of plasma leakage[5].
- Serum sodium was low in 15% of our patients.The reason for hyponatremia is thought to be salt depletion, reduced excretion by the kidneys.It was shown that mild hyponatremia was a common feature of dengue infection[6].
- Our study had a urine albumin prevalence of 40%.It is shown that urine albumin excretion may be a predictor of dengue disease severity with proteinuria increased in patients with Dengue hemorrhagic fever.Urine albumin excretion usually increases between days 4-7 of dengue fever just before defervesence [7,8].

CONCLUSION
Dengue fever is a condition very commonly encountered in India. In addition to the haematological effects it may be accompanied by some biochemical abnormalities which include elevated liver enzymes, low sodium and ionised calcium levels, hypoalbuminemia, increased urine albumin excretion. Many of the features require studies in greater detail.

REFERENCES
1. World Health Organization. Dengue guidelines for diagnosis, treatment, prevention and control new edition. Geneva, 2009. Available at http://www. who.int/ rpc/ guidelines/ 9789241547871/en/.
2. Souza LJ, Nogueira RM, Soares LC, Soares CE, Ribas BF, Alves FP, et al. The impact of dengue on liver function as evaluated by aminotransferase levels. Braz J Infec Dis.

2007;11(4):407-10.

3.   Nguyen TL, Nguyen TH, Tieu NT. The impact of dengue haemorrhagic fever on liver function. Res virol. 1997;148(4):273-7.

4.   Dahanayaka NJ, Agampodi SB, Arachchi UK, Vithange SP, Rajapakse R, Ranathunga K, et al. Dengue fever and ionized calcium levels: significance of detecting hypocalcaemia to predict severity of dengue. Ceyl Medic J. 2017;62(1).

5.   Brito CA, Albuquerque MD, Lucena-Silva N. Plasma leakage detection in severe dengue: when serum albumin quantification plays a role?. Revista da Sociedade Brasileira de Medicina Tropical. 2007;40(2):220-3.

6.   Rose J, Palanisamy A, Vijayarani H, Anna A. Electrolyte disturbance in Dengue infected patients Internat J Advanc Pharmacy, Biol Chemistr. 2014;3(4):933-6.

7.   Bhagyamma SN, Sreenivasulu U, Shyam Prasad BR, Anuradha R, Durga T. Electrolyte disturbance in dengue infected patients: A hospital based study. Int J Res Health Sci. 2015;3(1):130-3.

8.   Kumar ss, kanna s, palaniandavan s. Assessment of proteinuria for early diagnosis and risk prediction of dengue hemorrhagic fever/dengue shock syndrome in dengue infections. 2017;8(1):440-443.

9.   Vasanwala FF, Thein TL, Leo YS, Gan VC, Hao Y, Lee LK, et al. Predictive value of proteinuria in adult dengue severity. PLoS Neglected Trop Dis. 2014;8(2):e2712.

10. Sharma S and Sharma SK. Clinical profile of DHS /DSS in adults during 1996 outbreak in Delhi , India A dengue bulletin .1998;22: 20-27.