Changing Clinical and Biochemical Profile of Dengue Fever in Chittorgarh Region [Rajasthan]

Authors
Dr Anish Jain (M.D. Medicine)[1*], Dr Madhu Jain (M.D. Patho)[2],
Dr Atul Khabya (MBBS)[3], Somil Jain[4]
[1]HOD. Medicine Dist. Hospital Chittorgarh, [2]Cyto- Oncologist
[3]Asst. Dept. of Medicine, [4](M.B.B.S 2ND Year Student) RNT Medical College, Udaipur
*Corresponding Author
Dr Anish Jain (M.D. Medicine)

Abstract
Dengue is arboviral infection presenting with fever, arthalgia, headache, and rashes has spread to all tropical and subtropical countries. It is caused by arbovirus and transmitted by Aedes Ageypti and Aedes albopictus mosquitoes. There are four serotypes of dengue viruses [DEN1, DEN2, DEN3, DEN4] and DEN5 is also discovered. It causes wide spectrum of illness from mild asymptomatic illness to severe fatal dengue hemorrhagic fever. The WHO in 2009, also included neurological involvement in dengue infection.
Objectives: *To Review the changing trends in Dengue last two years in chittorgarh region.*
Aim: *To detect the presentation and complications of Dengue fever and impact of awareness in public about the disease.*
Material and Methods: *This study included 200 patients of age ranging 18-70yrs admitted in medical wards with fever at GOVT. Hospital, Chittorgarh, Rajasthan, India who had positive N S 1/IgM positive. All were clinically examined, hematologic ally and biochemically tested and analyzed.*
Results: *We found that there is marked decrease in hemorrhagic dengue fever[DHF] and it complication in this area .*
Keywords: *D F, D H F, DSS Thrombocytopenia, leucopenia.*

Introduction

Dengue is important arthropod borne disease worldwide. It causes 50 million dengue infections every year.

Dengue is an acute febrile illness that is caused by a flavivirus and vector is mosquito, that is Ades aegypti and Ades albopictus, that helps in spread. This disease is largely prevalent in tropical countries like India.

Dengue has varied clinical presentation often with unpredictable clinical progression and outcome. But the majority of patients recover following a non severe episode of illness, and very few patients progress to severe disease, like hematemisis and bleeding from other mucosal area. One case in our study progressed to G B syndrome.

The Symptomatic dengue virus infection could be grouped in to

a. Undiffrenciated fever,

b. Dengue fever [DF]

c. Dengue haemorraghic fever [DHF]. Dengue haemorrghic fever is further classified in four severity grades (i-iv), with grades III and IV being defined as dengue shock syndrome [DSS].

The balanced approach to case management, early patient awareness and diagnosis leads to drastic decrease in complications in this region, which is a positive sign for community health to reduce morbidity and mortality.

Material and Methods

This prospective observational study was done in medical ward of a secondary referral care centre in Chittorgarh [Rajsthan, India], has population of 15 lakhs (2011 CENSUS). The climate here is hot and semi arid. Patients aged 18 to 70 years were included in the study. Only Dengue [S D BIOSENSOR, DUO COMBO DEVICE] card was used for diagnosis. Out of these only 5 cases were positive with other concomittent illness like scrub thypus thyphoid and tuberculosis. All patients under study were undergone haematological and biochemical tests (CBC PBF, X ray Chest, Renal and Liver Function Tests, electrolytes profile and serological test for fever [Thyphoid, Dengue, chikanguniya etc])

Results

- Out of 200 confirmed cases majority of patients were from 18 to 60 yrs [table 1]. The fever [3] was commonest symptom in around 100 %, and lasted for 3to 4 days, headache was in 100 %, nausea and vomiting were in 50%,rashes in 5%, Myalgia in 40%.

- Pain abdomen in 70% and around 3% of patients had bleeding complication including hematemesis. Only one patient had neurological complication that is G B syndrome.

- Hepatomegaly was presented in 30%, spleenomegaly in 5% and serositis in 10%, out of these pleural effussion in 9% and ascities in 1% patients.

- 15% Patients had S B P <90 mmHg and recovered with oral and intravenous fluid. No DIC and ARDS were found in our study.

Table 1: Gender and age distribution

Age	18-30	30-45	46-60	>60
Male	30	45	25	4
Female	28	40	24	4
Total	58	85	49	8

Table 2: Clinical Features

Clinical features	No of Patients	%	Clinical features	No of patients	%
Fever	200	100	Pleural effusion	18	9
vomiting	100	50	SBP<90mmhg	30	15
Pain abdomen	140	70	Breathlessness	2%	20
Headache	200	100	ARDS	0	0
Spleenomegaly	10	5	DIC	0	0
Myalgia	80	40	Neural complication	1	0.5%
Rash	10	5	Rashes	5	2.5%
Ascities	2	1			
Hepatomegaly	60	30			

Table -3 Bleeding Manifestation

Bleeding Tendency	No of patients	%
Haemtemesis	1	0.5

Table 4: Laboratory parameters

Parameters	No of Patients	%
SGPT >35 I U /L	150	75%
Elevated three times normal	30	15%
SGOT >35I U /L	160	80%
Elevated three times normal	80	40%
ALP [Normal in all patients		
Thrombocytopenia		
<30,000/cumm	100	50%
<80,000/cumm	50	25%
80-130,000/cumm	50	25%
Hb [normal in all patients]		
TLC <4000/cumm	30	15%
4000-6000/cumm	170	85%
Hyponatraemia[<130mEq/L]	10	5%
Hypokalaemia	20	10%
3.5-3.0mEq/L		
3.0-2.5 mEq/L	4	2%
Creatinine>1.5%	8	4%
Urea >45%	10	5%
Chest Xray effusion	2	1%
U S G free fluid in pleural (minimal) and peritoneal cavity	18+2=20	10%

Table 4 shows that liver function test was elevated in most of cases. Although alkaline phosphates was normal in all cases. The haematological parameters shows that leucopenia was present in 15%.

Thrombocytopenia- counts less than 30,000/cumm was in 50% cases and <80,000 was in 25% and in 25%it was to 80,000- 130,000/cumm, at time of admission. Electrolyte imbalance mainly hypokalemia found in was in 10% and only 2% patients had potassium <2.5 meq/L .Hyponatermia was seen in 5% cases.

The weakness in both lower limb which proceed to G B syndrome during course of disease was seen in one case. On Xray chest and ultra sound serositis seen In 10 % cases.

Discussion

Dengue is emerging major viral acute febrile disease now a days with varied clinical symptoms and changing haemato- biochemical values. The current study showed that here in our chittorgarh region last two years decreasing dengue haemorraghic fever and reduced other complication is good sign of herd immunity due to its endemecity and public awareness and early and prompt diagnosis by physicians and accessible lab test like Dengue combo test and ELISA.

In our study the gender ratio is almost equal, although males are more affected [52% are male as compared to females 49%]

The fever is almost present in 100% cases, which was similar to other Studies[5]. Headache was present in 100% cases., varied from study of Kumar et al[6], they found less percentage .The gastrointestinal symptoms were next major presentation, nausea ,vomiting and pain abdomen seen in 50-75%[6], and very well managed earliest to prevent further complications. The other infectious disease like scrub typhus, typhoid also prevalent in this region and excluded by card test..The liver injury in dengue may be due to direct effect of the virus or host immune response on liver cells or localized leakage inside liver[7] [japi,3,4] LIKHNA.

Haemetmesis and petchieal rashes were the only Bleeding manifestations, these were due to low platelet count, here we found that the platelet counts in most cases was below 80,000/cumm and does not correlate between bleeding tendencies.[8], not a single patient was transfused the platelet concentrate even their count was less than 10,000/cumm. All thrombocytopenic patients recovered within 3-7 days of admission. The leucopenia may be due to acute bone marrow suppression may be by virus induced. In our study leucopenia [count <4,000/cumm] found in only 15 % cases. While in other study Itoda et al and others study [Ageep et al][9], leucopenia was detected in 71% cases. This is a changing scenario in our region in last two years similar to ,Mittal et al[10] who found leucopenia in 19.2% of cases.

Hypotension; S B P <90mmHg found in 15% caes and respond well to intravenous fluids.

Electrolyte imbalance is also seen in dengue fever Hypokalemia [<3.5-2.5mEq/L]seen in24% and Hyponatraemia was in 5%patients,but we did not find symptomatic hypokalemia. Hypontraemia was attributed due to increased antidiuretic harmone levels and, and hypokalemia was due to increased renal excreation of potassium due to

activation of rennin angiotensin aldosterone mechanism secondary due to volume depletion[11]

Serosities is mainly caused by capillary leak because of host and virus interaction causes, vascular endothelial changes and transient imbalance of inflammatory mediators like cytokines and chemokines.

We found in our study ascites in 1%, pleural effusion in 9%on ultrasonography. The creatinine was raised only in 4% of cases and was >1.5mg/dl, not complicating the course of disease. Liver dysfunction was universal almost in all patients. It varies from mild to moderate liver injury. The ALT is increased more than three times of normal found in 15% and AST was more than three time normal seen in 40%.The75% cases Alanine transaminase [ALT] had raised >35U/L, whereas in 80% patients Aspartate transaminase [AST]>35U/L. The sign of liver failure was not observed in any patient. Deprivation of oxygen leads to injury of liver parenchyma which releases transaminase correlate the degree of hepatocellular injury but without any association with prognosis.[12,13]

One patient had neurological involvement during course of disease as Guillain Barre syndrome [GBS], diagnosed on the basis of clinical sign and symptom .He felt difficulty in passing urine first and then difficulty in walking which progressed to both lower limb paraesis. He was given methylprednisalone one gram I V then he was reffered to tertiary center on day 3., where he was diagnosed as G B syndrome. Then he recovered completely within 30 days.

In our study the complication like ARDS, DIC were not seen. Only one patient had Haemetemesis who was reffered to Tertiary care centre. Mortality rate in our study was nil..Our study shows that there are changes in clinical and laboratory parameters and there is decrease in case fatality rate.

These features are contributed by the increased awareness of disease and consequent improved diagnosis and management, that separate this chittorgarh region from other regions of Rajasthan in last two years.

Limitation of our study

Nerve Conduction study and serotyping of Dengue Virus could not be done at our place.

Conclusion

As in other tropical countries, in India Dengue is emerging as major acute febrile illness now a days and it is big threat to human life. Although it is endemic in our region as well in Rajasthan. Due to presence of other acute febrile conditions like malaria, scrub typhus, Enteric fever in this region with common manifestations in all above mention disease, contributes a difficulty in diagnosis of dengue fever. But with high clinical suspicion & early diagnosis with S D biosensor Dengue combo Test has lead to reduced complication and early recovery and low fatality in our region in last two years. There is havoc in society for platelet transfusion but optimal care of patient's vitals and hydration minimize the possibility of platelet transfusion.

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