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ORIGINAL ARTICLE

Assessment of dengue fever in 80 children

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ABSTRACT:
Background: Dengue is an arboviral disease caused by infection with any one of four related dengue virus (DENV) serotypes. The present study was conducted to assess dengue fever in children less than 16 years of age. **Materials & Methods:** 80 cases of dengue fever in children of both genders were diagnosed based on detection of DENV NS1 antigen ELISA, anti-JEV- and anti DENV-specific IgM antibodies in serum samples and in cerebrospinal fluid (CSF). Clinical and laboratory features were recorded. **Results:** Age group 12-14 years comprised of 30 boys and 16 girls and age group 15-16 years had 20 boys and 14 girls. Clinical features were fever present in 72, rashes in 56, respiratory distress in 45, pain abdomen in 60, loose stools in 15, headache in 34 and vomiting in 37. The difference was non- significant (P> 0.05). The mean hematocrit was 33.2%, platelets (per 103 /µl) was 2.61, white blood cells (per103 /µl) was 9.02, neutrophils was 5.25, lymphocytes was 2.15, urea was 4.1mmol/L, creatinine was 69.4µmol/l, alanine transaminase was 78.5IU/l, urine protein was 13.5mg/dL and urine red blood cells was 2.6. **Conclusion:** Dengue fever is common in children. Assessment of platelet counts may be helpful in early detection and management of patients.
Key words: Dengue, Children, Platelets

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INTRODUCTION

Dengue is an arboviral disease caused by infection with any one of four related dengue virus (DENV) serotypes.[1] It is currently the most important mosquito-borne viral pathogen affecting humans, and is emerging as a major threat to global health. Best estimates indicate that some 3 billion people live in parts of the world where they are at risk of infection and that around 96 million symptomatic episodes and approximately 20,000 deaths occur each year.[2]

In India the annual incidence is estimated to be 7.5 to 32.5 million.[3] In Odisha, a state of Eastern India, the first outbreak was reported in 2010, followed by extensive outbreaks in 2011, affecting a large number of people.[3]

Among symptomatic dengue cases a wide variety of clinical manifestations are seen, ranging from mild febrile illness to severe and potentially fatal disease.[4] Only a small proportion of patients progress to more severe disease, typically manifesting with a transient systemic vascular leak syndrome around the time of defervescence; plasma leakage occurs, usually accompanied by altered haemostasis and thrombocytopenia.[5] Leakage may be profound, particularly in children, sometimes resulting in life-threatening dengue shock syndrome (DSS). Other severe complications, such as severe liver, cardiac or neurological involvement, may also occur but are less frequent.[6]The present study was conducted to assess dengue fever in children less than 16 years of age.

MATERIALS & METHODS

The present study comprised of 80 reported cases of dengue fever in children age ranged 12-16 years of both genders. Parental written consent was obtained. Inclusion criteria were axillary temperature ≥ 38.0 °C within 48 hours of admission.

Data such as name, age, gender etc. was recorded. A thorough clinical examination was performed. Dengue diagnosis was based detection of DENV NS1 antigen ELISA, anti-JEV- and anti DENV-specific IgM antibodies in serum samples and in cerebrospinal fluid (CSF) specimens. Haematocrit, platelet counts, white blood cell (WBC) counts, urea, creatinine, alanine aminotransferase (ALT) and the presence of urinary protein or red blood cells (RBC) was estimated. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

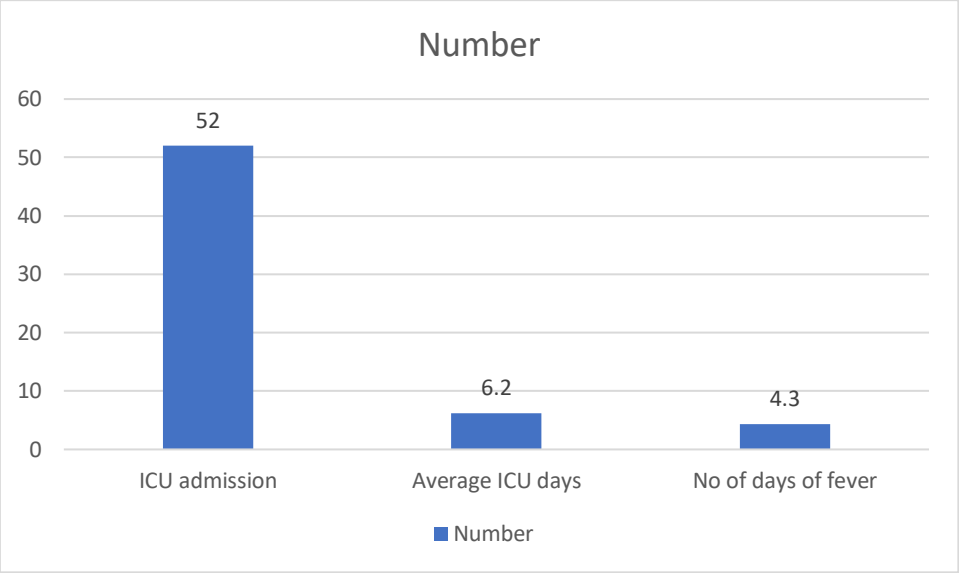
Table I: Distribution of patients

Age group (years)	Boys	Girls
12-14	30	16

15-16	20	14

Table I shows that age group 12-14 years comprised of 30 boys and 16 girls and age group 15-16 years had 20 boys and 14 girls.

Table II: Assessment of parameters



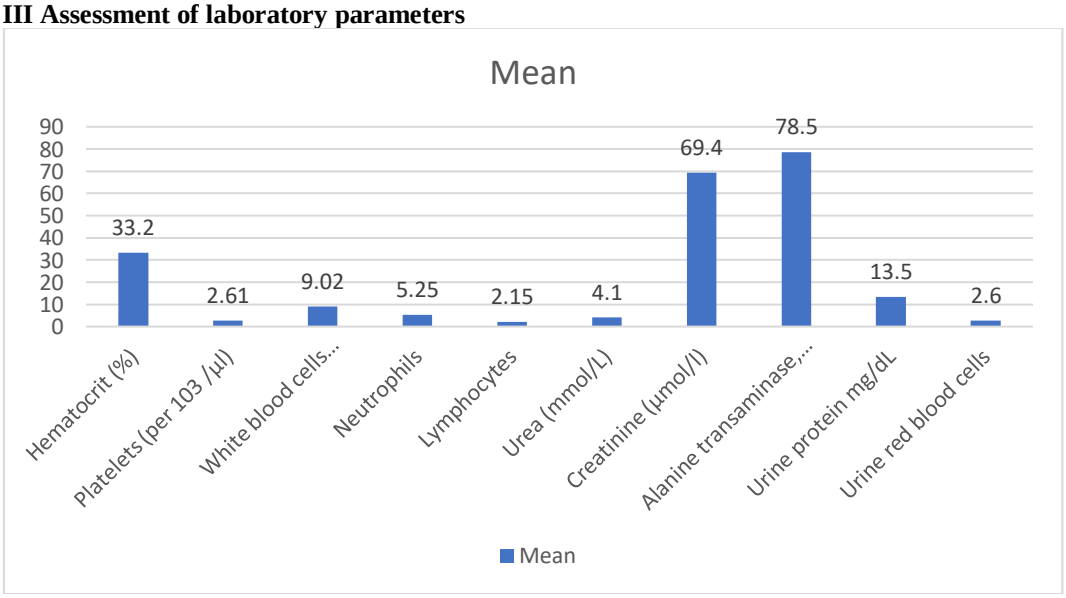
Graph I shows that ICU admission was seen in 52, average ICU days was 6.2 days, number of days of fever was 4.3.

Table II: Assessment of clinical features

Clinical features	Number	P value
Fever	72	0.82
Rash	56	
Respiratory distress	45	
Pain abdomen	60	
Loose stools	15	
Headache	34	
Vomiting	37	

Table II shows that clinical features were fever was present in 72, rashes in 56, respiratory distress in 45, pain abdomen in 60, loose stools in 15, headache in 34 and vomiting in 37. The difference was non- significant (P> 0.05).

Table III Assessment of laboratory parameters



Graph II shows that mean hematocrit was 33.2%, platelets (per 103 /µl)was 2.61, white blood cells (per103 /µl) was 9.02, neutrophils was 5.25, lymphocytes was 2.15, urea was 4.1mmol/L, creatinine was 69.4µmol/l, alanine transaminase was 78.5IU/l, urine protein was 13.5mg/dLand urine red blood cells was 2.6.

DISCUSSION

Dengue fever causes a high burden of disease and mortality across tropical and subtropical regions in Southeast Asia, Africa, the Western Pacific, and the Americas.[7] Dengue virus comprises five serotypes, DENV-1, DENV-2, DENV-3, DENV-4 and DENV-5, which are transmitted by Aedes aegypti mosquitoes. An estimated 2.5 billion people worldwide are at risk of dengue.[8] More than 50 million dengue infections are estimated to occur annually, of which approximately 500,000 result in hospital admissions for severe dengue in the form of dengue haemorrhagic fever (DHF) or dengue shock syndrome (DSS), principally among children.[9]

According to the WHO the case fatality rate for dengue is roughly 5%. Aedes albopictus was found to be the most abundant vector in the areas surveyed, followed by Aedes aegypti. DENV-2 is the prevailing serotype.[10] The case fatality rate in patients with severe dengue infection which consists of dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS) can be as high as 44%.[11]The present study was conducted to assess dengue fever in children less than 16 years of age.

We found that age group 12-14 years comprised of 30 boys and 16 girls and age group 15-16 years had 20 boys and 14 girls. Mandal et al[12]documented varied clinical manifestations of dengue patients in a tertiary care centre of eastern India.Total 74 MAC ELISA positive dengue patients are included in this observational study and analyzed.Most common clinical feature was fever (100%) followed by headache (62.16%). Atypical features like transaminitis and different neurological manifestations were present in 83.83% and 11.11% cases respectively.One should aware of different atypical presentations of dengue fever to diagnose and intervene timely.

We observed that clinical features were fever was present in 72, rashes in 56, respiratory distress in 45, pain abdomen in 60, loose stools in 15, headache in 34 and vomiting in 37. Mallhi et al[13]evaluated dengue cases for better understanding of clinic-laboratory spectrum in order to combat this disease.A total 667 dengue patients (30.69 ± 16.13 years; Male: 56.7 %) were reviewed. Typical manifestations of dengue like fever, myalgia, arthralgia, headache, vomiting, abdominal pain and skin rash were observed in more than 40 % patients. DHF was observed in 79 (11.8 %) cases. Skin rash, dehydration, shortness of breath, pleural effusion and thick gall bladder were more significantlyassociated with DHF than DF. Multivariate regression analysis demonstrated presence of age > 40 years (OR: 4.1, P < 0.001), secondary infection (OR: 2.7, P = 0.042), diabetes mellitus (OR: 2.8, P = 0.041), lethargy (OR: 3.1, P = 0.005), thick gallbladder (OR: 1.7, P = 0.029) and delayed hospitalization (OR: 2.3, P = 0.037) as independent predictors of DHF. Overall mortality was 1.2 %.

We found that mean hematocrit was 33.2%, platelets (per 103 /µl) was 2.61, white blood cells (per103 /µl) was 9.02, neutrophils was 5.25, lymphocytes was 2.15, urea was 4.1mmol/L, creatinine was 69.4µmol/l, alanine transaminase was 78.5IU/l, urine protein was 13.5mg/dL and urine red blood cells was 2.6. Kamath et al[14]revieweddengue patients admitted to the Pediatric Intensive Care Unit (PICU). Of 858 patients with dengue fever/DHF admitted to the hospital during the study period, 109 cases with severe forms of disease required PICU admission, of which 9 patients died. 77 were under 5 years of age. The commonest indication for PICU admission was persistent shock (39 patients) followed by requirement for positive pressure ventilation in 29 patients (10 of whom had Acute Respiratory Distress Syndrome [ARDS]) and neurological symptoms in 24 patients. An important finding was the presence of diastolic dysfunction in 3 children. Six deaths of refractory shock included 4 who had ARDS and DIC and 2 who had shock with DIC 3 patients had abdominal compartment syndrome (ACS) has not been previously described in children with DSS and may lead to fluid refractory shock if not corrected. All patients had thrombocytopenia which was a defining feature of the syndrome, while 74 were also coagulopathic and 6 had severe fatal DIC. Hepatic dysfunction was more severe in children with prolonged shock, however, only a fifth of cases (5/24) with neurological manifestations were in shock. Other significant reasons for neurological presentation included cerebral edema, and encephalopathy secondary to hepatic dysfunction. 2 children had features of acute disseminated encephalomyelitis (ADEM), previously only described in adults with dengue.

CONCLUSION

Authors found that dengue fever is common in children. Assessment of platelet counts may be helpful in early detection and management of patients.

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