Clinical Profile And Outcome of Serologicaly Proven Dengue Fever in Children in Rural Teaching Institute

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Abstract:
Aims And Objectives
1. to analyse the clinical profile of serologicaly proven dengue fever
2. to analyse the outcome of serologicaly proven dengue fevrer
Materials And Methods
Study design: descriptive study ,
Study period: june2014-june2015
Study place: meenakshi medical college hospital &research institute
Study population: all children of both sexes between 1 to 14 years of age admitted in paediatric ward with acute febrile illness fulfilling WHO criteria for dengue fever,   sample size : 60 children fulfilling inclusion criteria were recruited over a period of one year.Results: 50 cases(83%) had serologically confirmed dengue infection. Among these 50 cases, 24 cases(48%) with gastrointestinal symptoms, 16 cases (32%) presented with respiratory symptoms, , 10 cases(20%) with only fever, 3 cases(6%) with shock . There was no overall mortality. 18 cases(36%) with thrombocytopenia,12 cases(24%) with raised hematocrit and Serological tests showed 28 cases(56%) positive only for NS1 antigen, 16 cases(32%) positive for only IgM antibody, 6 cases(12%) with IgG antibody positive, 10 cases(20%) with both NS1 antigen and IgM positive.conclusion: GI symtoms majorly abdomen pain, vomiting are commonest manifestation of dengue fever.early diagnosis by NS1 antigen detection and timely fluid management prevent complications and mortality
Keywords: dengue fever, NS1 antigen, , shock

I.   Introduction

In recent years dengue has become a major global public health concern. Approximately 2.5 billion people living mainly in urban areas of tropical and subtropical regions are estimated to be at a risk of acquiring dengue infection. WHO currently estimates that worldwide 100 million cases of dengue fever occur and between 250,000 and 500,000 cases of dengue hemorrhagic fever are reported (WHO,2000) while dengue is endemic in more than 100 countries , most cases are reported from south east asia and western pacific regions. The resurgence of dengue has been frequently reported from different parts of the country in both urban and rural population. Dengue infections vary in severity ranging from influenza like self limiting illness to life threatening dengue hemmorhagic fever and dengue shock syndrome which if left untreated are associated with mortality as high as 20%. Recently DENV non structural antigen (NSI antigen) has evolved as a new biomarker for early diagnosis of DENV infection. Dengue NSI antigen, a highly conserved glycoprotein is abundant is serum of patients during early stages of DENV infection (young et al, 2000) and can be detected before the formulation of antibodies (young et al, 2009). Currently NSI antigen capture ELISA and rapid NSI antigen commercial kils for detection of NSI antigen have been developed and evaluated. Its use has been suggested for early diagnosis of dengue infection after the onset of fever (chaiyaratana et al, 2009, Ramirez et al 2009, Mcbride 2009) representing a new approach for diagnosis of acute dengue infection. This study describes clinical profile of dengue infected children admitted to our hospital as cases of febrile illness.

II.   Methodology

This is a descriptive study conducted in our institute over a period of 1year. Children from age group 1-14 yrs admitted in department of pediatrics as case of acute febrile illness fulfilling WHO criteria for dengue fever were enrolled into the study. 60 cases were enrolled into the study after approval by the institutional ethics committee and parent (or) guardian gave a written informed consent.A detailed history as well as a general and systemic clinical examination (including tourniquet test) was recorded on standard proforma after admission. Hematological profile and biochemical investigations were done at the time of admission and were followed by daily (or alternatively) investigations as required until discharge. A comparison of clinical profile presented by the children at admission were studied.NSI antigen detection was done using standard diagnostic dengue NSI Ag ELISA. All samples were tested using a commercial dengue IgM and IgG capture ELISA in compliance

with manufacturer instruction.The clinical progression of the disease and treatment during the stay in the hospital were monitored and immediate complications if any were looked for. Outcome measure noted were death due to illness and recovery with or without immediate complications such as intracranial bleeding, encephalitis, fulminant hepatitis, acute kidney injury.

III. Results and analysis

Out of 60 cases of febrile illness enrolled into the study, 50 cases (83%) had serologically confirmed dengue infection of those 10 cases, four children had confirmed typhoid fever, two had rickettesial infection, four children were positive for malaria. The remainder of non dengue group had no alternative diagnosis but serology was convincingly negative. Most are likely to have had other viral infections.
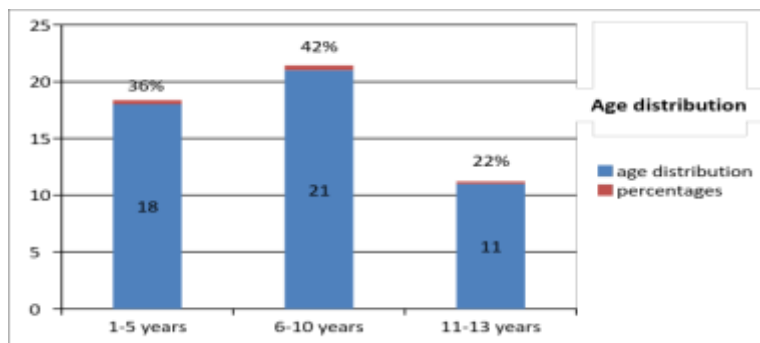
3.1.*Sex distribution*

There were 28 cases(56%) males and 22 cases(44%) females
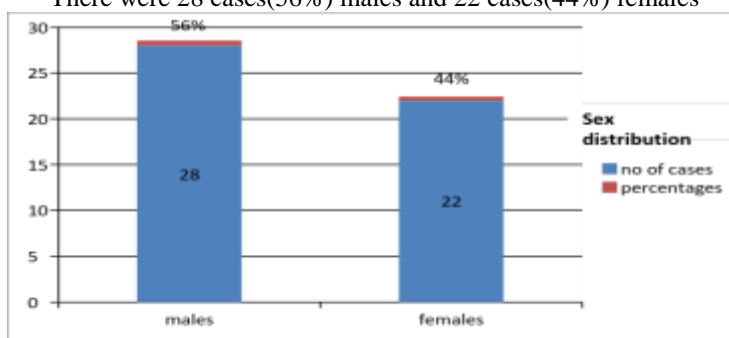
3.2.Age distribution

18 cases (36%) were between age 1-5 years, 21 cases (42%) between 6-10 years, and 11 cases (22%) between 11-14 yrs


3.3.Clinical manifestations

Out of 50 cases of serologically confirmed dengue,10 cases (20%) presented only with fever, 16 cases(32%) with respiratory symptoms like cough and coryza,14 cases (28%) with vomiting, 4 cases (8%) with diarrhea,4 cases (8%) with abdominal pain, 3 cases (6%) with hepatomegaly ,2 cases (4%) with headache, 3 cases (6%) with shock,
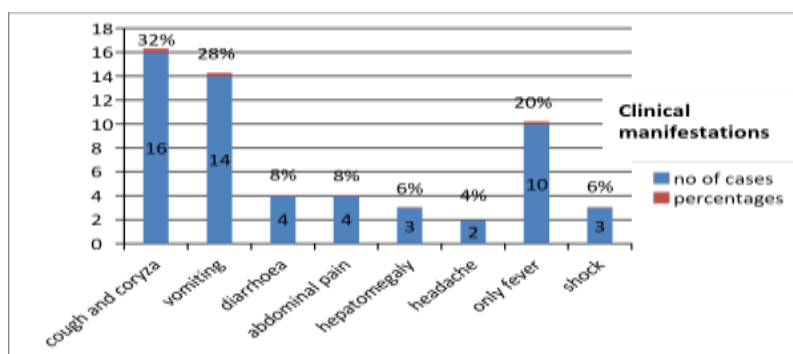
3.4. Laboratory investigations

Of 50 cases, 24 cases(48%) had leucopenia(total WBC count <4000 cells/ cu.mm) ,18 cases(36%) had thrombocytopenia(platelet count less than 1 lakh cells/ cu.mm) ,12 cases(24%) had raised hematocrit(Hct >45%) , 3 cases had raised AST(> 45 IU/ l).
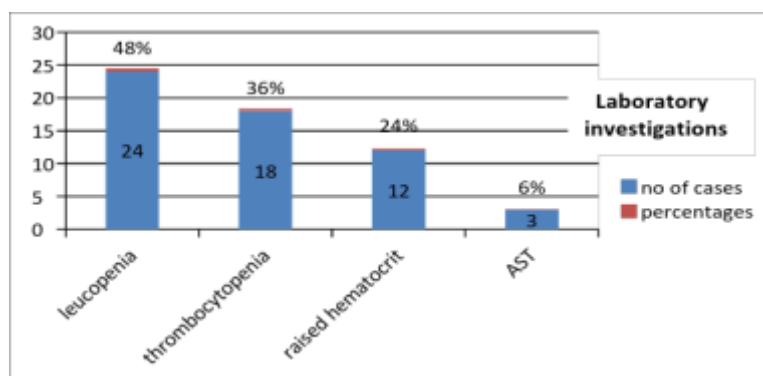
3.5.Serology

Serological tests showed 28 cases(56%) positive for only NS1 antigen test , 16 cases (32%) with IgM antibody positive, 6 cases(12%) with IgG antibody positive , 10 cases (20%) with both NS1 and IgM positive
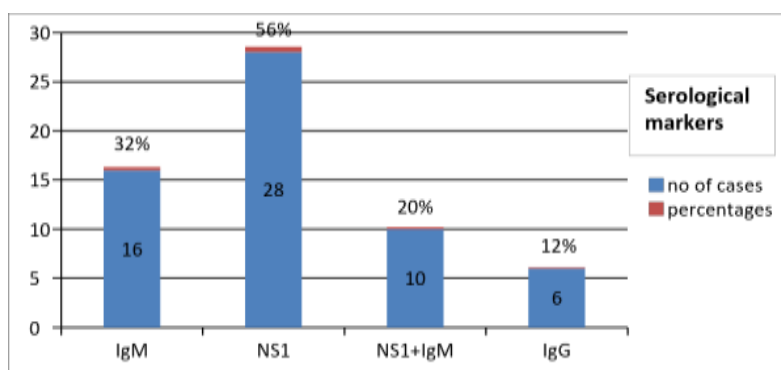
According to the new WHO guidelines , out of 50 cases in this study with serologically confirmed dengue 21 cases(42%) fit into the criteria for dengue with warning signs requiring strict observation and medical intervention.3 cases(6%) with shock and 3 cases(6%) with raised AST(>45 IU/ l) fit into criteria for severe dengue

The proportion test is applied to find out if any statistical difference and significance is seen between serological tests (NSI antigen and IgM antibody). It is found that the critical ratio was 2.417 with P < 0.02 considered to be statistically significant in this study. Hence, it is concluded that NSI antigen test is considered to be sensitive for early diagnosis of dengue virus infection.

IV.   Discussion

This study describes the clinical profile,hematological profile and serological profile and outcome of dengue virus infection in children. Majority of the cases, 54% were males and 46% were females. Maximum number of cases42% was in the age group of 6-10years.most common symptoms are cough and coryza(32%)followed by vomiting(28%),abdomen pain(8%)and diarrohea(8%) .gastrointestinal symptoms together (vomiting ,loose stools andabdominal pain) constitute major clinical presentation(44%) than respiratory symptoms in this study unlikely that of 38% cases as reported by Sharma et al.In our study 32% of cases presented with respiratory symptoms as of 96% cases with congested pharynx and 13% with rhinitis as reported by Nimmannitya et al.In haematological profile majority of them had(48%) leucopenia than thrombocytopenia(365).overall complications and mortality were nil, may be due to early diagnosis by NS1 antigen detection and timely management

About 28 cases(56%) of patients were positive for NS1 antigen compared to other serological tests using antibodies like IgM and IgG.Various studies have confirmed the detection of NS1 antigen is useful for early diagnosis of dengue infection(Chaiyaratana et al,2009; Zainah et al,2009; Ramirez et al,2009;McBride

2009). In this study 20% of cases are positive for combination of both NS1 antigen and IgM antibody. This is in accordance with the findings of studies showing NS1 antigen ELISA when used together with IgM capture ELISA is sufficiently sensitive and specific in the endemic setting(Sekaran et al,2007; Blacksell et al,2008).Therefore the dengue NS1 atigen test can be used to complement current antibody test used in the laboratories to increase the diagnostic efficacy for early diagnosis of dengue infection.

V.   Conclusion

Dengue fever in children shows male preponderance in this study, increased incidence of infection was seen in early childhood period(6-10y).majority of children presented with gastrointestinal symptoms.early diagnosis by *NS1* antigen detection and timely fluid management prevent complications and mortality.

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