Conclusion and recommendation

The conclusion of this review, based on the outcome of this study, is that Nigeria has not been successful in the eradicating poliomyelitis. The Government should further intensify their efforts to educate the population about the polio campaign and should ensure that all stakeholders are involved. Or there will be a need to legislate in order to reduce the number of cases of poliomyelitis and other vaccine preventable diseases.

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Clinico-laboratory findings of patients during dengue outbreak from a tertiary care hospital in Delhi

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TROPICAL DOCTOR 2008; **38**: 175–177
DOI: 10.1258/td.2007.070229

SUMMARY There are outbreaks of dengue every year in India. They vary in the predominant serotype involved, clinical features and predominant laboratory findings. This study of the 2006 outbreak in Delhi highlights clinical features and laboratory parameters of dengue cases and compares the clinical features among the adult and paediatric age groups. The 2006 outbreak had higher bleeding manifestations and a greater involvement of the adult male population than in previous outbreaks. No correlation was observed between platelet count and different bleeding manifestations until they dropped $<$20,000 per μL. Few patients developed a florid picture before seroconversion, highlighting a greater stress on the haematological rather than immunological profile of such patients. Atypical symptoms, such as diarrhoea, menorrhagia and seizures were often the presenting complaints rather than the typical clinical features of dengue.

Introduction

Cases of dengue are increasing every year despite measures to control its vector mosquitoes *Aedes aegyptii* and *Aedes albopictus*.[1] The number of cases peak in October – November every year, when conditions are ideal both for the virus and the vector. This climatic correlation with disease incidence has been evaluated.[2] Since 1967, eight outbreaks have been documented in Delhi, the last ones being reported in 2003 and 2005.[3,4]

The early diagnosis of a case of fever as dengue is based primarily on clinical features, with platelet count and haematocrit as main laboratory parameters. The spectrum of clinical features includes fever, headache, myalgia, arthralgia and various bleeding manifestations. Diagnosis during the early stages of disease includes isolation of the genome from serum using reverse transcriptase-polymerase chain reaction (RT-PCR) or serotypic characterization like single – tube multiplex RT-PCR.[5] Dengue virus-specific antibodies in serum and blood that develop after the fifth day of infection can be detected by five commonly used serological tests: haemagglutination inhibition, complement fixation, neutralization test, IgM capture enzyme-linked immunosorbent assay (ELISA) (MAC ELISA) and indirect IgG ELISA. However, early identification of the exact clinical profile is of paramount importance as it greatly reduces morbidity and mortality, especially in cases with strong clinical features of dengue but which are serologically negative.

We report an outbreak of dengue from a tertiary care hospital in Delhi, India from September to November 2006 that peaked during the third week of October. The main objective of this study was to evaluate the clinical and laboratory features of patients diagnosed with dengue and compare them with previous outbreaks.

Material and methods

Clinico-laboratory data were collected from 399 in-patients (271 male and 128 female) admitted from September to November 2006 in the medical and paediatric wards of Lok Nayak Hospital, Delhi who were serologically diagnosed as cases of dengue. The Dengue Duo IgM and IgG rapid immunochromatographic strip test (PanBio®) was used for serological diagnosis. Detailed examination and history was collected from each patient. This included duration of fever, bleeding, vomiting, organomegaly, pain, neurological manifestations and if any other co-morbid features or associated illnesses. The laboratory parameters included platelet count, haematocrit, haemoglobin, TLC and liver function tests (wherever done). The test showing a positive reaction for IgG, IgM or both was considered serologically positive (as per kit literature) and included in the study. However, 10 patients who had typical symptoms of dengue[6] but were

Table 1 Clinical features comparing the present study with a previous clinical data from the same hospital

Clinical features	*Present study (n = 400)*	*Singh et al.[7] (n = 185)*
Fever	399 (100%)	185 (100%)
Average duration (days)	5.204 ± 1.8	4.5 ± 1.2
Mortality rate	20 (5.01%)	2.7%
Myalgia	251 (64.35%)	57.8%
Headache	192 (49.23%)	61.6%
Abdominal pain	104 (26.67%)	21%
Arthralgia	89 (22.8%)	–
Vomiting	61 (15.64%)	50.8%
Hepatomegaly	61 (15.64%)	10%
Splenomegaly	46 (11.8%)	5%
Diarrhoea	22 (5.64%)	–
Seizures	7 (1.8%)	–
Altered sensorium	5 (1.28%)	–
Ascitis	8 (2%)	–
Pleural effusion	4 (1%)	–
Ascitis + pleural effusion	3 (0.76%)	–
Bleeding manifestations	245 (62.8%)	–
Thrombocytopenia with bleeding	232 (59.48%)	–
Rash	154 (39.48%)	20%
Haemoptysis/haematemesis	70 (18%)	22%
Epistaxis	65 (16.67%)	–
Gum bleed	56 (14.35%)	–
Melena	40 (10.25%)	–

serologically negative for DENV antibodies were also included in this study. The data were tabulated in a master-chart and evaluated statistically using SPSS 12.0 statistical software.

Results

Three-hundred and ninety-nine patients were included in the study of which 389 were found serologically positive while 10 patients were seronegative. One-hundred and nine, 51 and 229 patients were positive for IgM, IgG and both IgM and IgG, respectively. The 10 seronegative patients had significant clinical evidence of Dengue and fever of an average duration of only 3.4 days that probably suggested failure to seroconvert. All patients ($n = 399$) had fever of an average duration of 5.2 ± 1.8 days. 232 (59.5%) patients had both bleeding and thrombocytopenia, but clinically confirmed cases of DHF and DSS were 125 (32%) and 31 (7.94%), respectively. The other 243 cases were classified as DF. The case fatality rate (CFR) was similar (2.6%) to the previous study done from the same institution.[7] The most common age group involved was from 21 to 30 years (35.6%), closely followed by the 11–20 years age group (32.8%).

Clinical features

The clinical features included myalgia (64.35%) followed by headache (49.23%), rash (39.48%), abdominal pain (26.67%), arthralgia (22.8%), vomiting (15.64%), hepatomegaly (15.64%), splenomegaly (11.8%). Hepatomegaly was significantly more in patients with DHF/DSS. Rarer atypical manifestations included diarrhoea (5.64%), seizures (1.8%) and altered sensorium (1.28%). Table 1 compares the clinical features from a study done from the same hospital.[7]

Two hundred and forty-five (62.8%) patients had bleeding manifestations, rash (39.48%) being the most common, followed by haemoptysis/haematemesis (18%), epistaxis (16.67%), gum bleed (14.35%) and melena (10.25%). Atypical bleeding manifestations included menorrhagia, haematuria, cerebellar bleeding and scalp haematoma. Signs of capillary leakage – i.e. ascitis, pleural effusion or both – were detected either clinically or by ultrasound and were present in eight, four and three patients only.

Hepatomegaly was almost equally common among the adult and paediatric groups and between both the sexes. However, splenomegaly was more frequently found among males in the paediatric age group. Rash was more frequently found in female paediatric group. Other bleeding manifestations were equally distributed in both the sexes and age groups, but gum bleed though equally found among males and females was more common in adults. Other clinical manifestations were equally frequent among males and females. Abdominal pain and myalgia were more common in children and adults, respectively.

Laboratory parameters

Among the seropositive patients, 109 had primary dengue infection and 280 had secondary dengue infection. Of the 399 patients, 346 (86.7%) had a platelet count of $<100{,}000/mm^3$, which is the World Health Organization (WHO) defined limit of thrombocytopenia[6] (Table 2). Among these 346 patients, 161 (46.5%) had platelet counts between 50,000 and $100{,}000/mm^3$, 163 (48%) had counts between 20,000 and $50{,}000/mm^3$, while 22 (6.3%) patients had counts $<20{,}000/mm^3$. Among these three groups, patients with bleeding manifestations were 112/161 (69.5%), 107/163 (65.6%) and 18/22 (81.8%). The mean haemoglobin levels were 15.28 ± 0.64 g% and this was not consistently related to the symptoms. Only 15 (3.84%) had haematocrit >45% and all these patients had platelet counts $<50{,}000/mm^3$. Leukopenia (<3000 white blood cells/mm^3) was seen in 62 (15.9%) patients. Raised AST/SGOT and ALP levels were observed in 204 (52.4%) patients while high ALT/SGPT levels were present in 180 (46.2%) patients.

Table 2 Laboratory findings in the present study

Abnormal laboratory findings	*No. of patients (%) (Total = 399)*		
Thrombocytopenia ($<100{,}000/mm^3$)	346/399 (86.7%)		
Three groups with thrombocytopenia	No. of patients (out of 346)	Patients with bleeding	Total number of bleeding manifestations
$50{,}000–100{,}000/mm^3$	161/346 (46.5%)	112/161 (69.5%)	161/112 (143%)
$20{,}000–50{,}000/mm^3$	163/346 (48%)	107/163 (65.6%)	155/107 (144%)
$<20{,}000/mm^3$	22/346 (6.3%)	18/22 (81.8%)	35/18 (194%)
Leukopenia ($<3000/mm^3$)	62 (15.9%)		
Haematocrit >45%	15 (3.84%)		
IgM positive	109	389 seropositive patients	
IgG positive	50		
IgM + IgG positive	230		
Elevated SGOT	204 (52.38%)		
Elevated SGPT	180 (46.15%)		
Elevated ALP	204 (52.38%)		

Discussion

According to the WHO survey of the SEARO countries, the current outbreak in 2006 had 10,935 documented cases of dengue (until 31 December 2006). In 2006, though the total number of cases decreased in India, the absolute number and percentage of cases increased in Delhi with 3363 cases representing 31% of all cases from India.[8] The 2006 outbreak in our institution demonstrated a peak during the second (87 cases) and third (78 cases) week of October similar to previous studies,[9] and correlating with the post monsoon period of subnormal rainfall and accumulation of water in man made vector reservoirs.[2] The most common age group involved was 21–30 years. This age group represents the mobile working population of Delhi and has a greater exposure to the vector. A higher number of adults may also be affected because of immunologically mediated thrombocytopenia. Cases of secondary dengue were much higher than primary dengue.

Male predominance (2.1:1) may be explained by their greater population and greater exposure to the vector. The disease affects adults more in North India.[9] In the present study, the adult to paediatric ratio was 4.1:1. All fatal cases had thrombocytopenia, bleeding manifestations and DIC.

The CFR for 2003, 2005 and 2006 were 1.68%, 1.31% and 1.56% respectively from cases reported from the entire country.[8] While the CFR in Delhi in 2006 was 1.96%,[8] it was slightly higher in the present study (2.6%) and the previous studies.[7,9] The predominating serotype in the current epidemic was DENV-3 as suggested by an unpublished study being done at our department. The high percentage of bleeding manifestations (62.8%) may have accounted for a higher mortality. There was poor correlation between thrombocytopenia and bleeding manifestations (P value >0.05) up to a count $<20{,}000/mm^3$ in the present study similar to other studies.[10] However, a small percentage of patients (approximately 3%) had bleeding without thrombocytopenia in the present study. Abnormal liver function tests especially SGOT (AST) were seen in a large number of patients which included the fatal cases also, but hepatomegaly was not so common.

Conclusions

Dengue has become an endemic disease with outbreaks occurring every year. The current outbreak had a slightly higher mortality with a higher percentage of bleeding manifestations that correspond poorly with a fall in platelet counts until $<20{,}000/mm^3$. The numbers of clinically suspected cases of secondary dengue were much higher probably due to multiple circulating serotypes. Hence, it is important to have a proper disease surveillance system to monitor and contain the spread of dengue.

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Neurocysticercosis in a north Indian hospital

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TROPICAL DOCTOR 2008; **38**: 177–179
DOI: 10.1258/td.2007.070231

SUMMARY In endemic regions, neurocysticercosis (NCC) is the most commonly diagnosed parasitic disease of the central nervous system, and the most common cause of convulsions and hydrocephalus in adults. During January 2000–December 2006, serum samples collected from patients presenting with various manifestations with a clinical diagnosis of cysticercosis and/or relevant computed tomography findings were subjected to an enzyme-linked immunosorbent assay test for NCC. Anti-cysticercus antibodies were detected in 155 of the 1096 (14.1%) cases. Generalized seizure (33.9%) was the most common presenting symptom. Solitary lesion (74.2%) was the most common radiological finding. This study provides an assessment of the epidemiology of NCC in Delhi and stresses the need for its prevention.

Introduction

Neurocysticercosis (NCC) is an infestation of the central nervous system by the larval cysts of the pork tapeworm, *Taenia solium*, for which man is a paratenic host. The infection commonly occurs following the ingestion of food and water contaminated with human faeces containing viable