

Changing patterns and outcome of Dengue infection; report from a tertiary care hospital in Pakistan

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Abstract

Objective: To identify predictors of outcome in patients with Dengue Infections at a tertiary care hospital and to analyze that if pattern of Dengue infection is changing in the past two years.

Methods: We reviewed 225 cases of confirmed dengue virus infection. The diagnosis was confirmed by presence of IgM antibodies against Dengue by ELISA in addition to fever according to WHO criteria.

Results: From years 2000-2004, 30(73%) had Dengue Fever (DF), 10(24%) had Dengue Haemorrhagic Fever (DHF) and 1(2.4%) had Dengue shock syndrome (DSS) while after 2005, 107(58%) had DF, 71(39%) had DHF and 6(3%) had DSS. Six patients (2.6%) died. Presence of shock (OR 2.9, 95% CI; 1.7-6.2), coma at presentation (OR 1.89, 95% CI; 1.02-3.3) and seizures (OR 1.6, 95% CI; 0.9-3.0) were important predictors of mortality.

Conclusion: These findings are suggestive of a change in pattern and outcome of Dengue at our institution. Larger data set from all around the country is needed to comment on epidemicity and endemicity pattern of the dengue in Pakistan (JPMA 58:488;2008).

Introduction

Dengue infection (Anti-D3) was first documented in 1982 from Punjab (Central Province of Pakistan) in 12 patients out of a sample of 174 from samples collected in 1968 and 1978.¹ The first reported outbreak of Dengue haemorrhagic fever in Pakistan was in 1994.² In 1997 Qureshi et al from our institute (Aga Khan University) reported 145 cases with Dengue fever. Out of these, 45% patients had haemorrhagic manifestations and one patient died.³ During the same time period, another group from our hospital, reported data of 76 patients with 59% positive for Dengue-2 antibodies.⁴ During same period, another group reported 30 paediatric patients with positive antibodies against D-1 and D-2 from Civil Hospital, Karachi.⁵ A recent study reported an isolation of Dengue-3 virus from 2005 epidemic.⁶

Methods

We reviewed 225 cases of confirmed dengue virus infection admitted to the Aga Khan University Hospital, Karachi between 2000 and 2006. The diagnosis was confirmed by presence of IgM antibodies against Dengue by ELISA in addition to clinical features of Dengue infection (fever and any two of these findings: headache, myalgia, petechiae, arthralgia, rash and leucopenia), according to WHO criteria.⁷ Patients were classified into Dengue Fever, Dengue Haemorrhagic Fever and Dengue Shock Syndrome based on WHO classification.⁷ Out of the total, the majority (184 patients) were seen during the

time period between 2005 and 2006. However, sporadic cases, 41 patients (18.2%) were admitted between the years 2000 to 2004.

Results

According to the WHO classification (from all 225 cases), 137 (61%) had Dengue Fever (DF), 81 (36%) had Dengue Haemorrhagic Fever (DHF) and 7(3%) had Dengue Shock Syndrome (DSS). Between years 2000-2004, 30(73%) had DF, 10(24%) had DHF and 1(2.4%) had DSS while after 2005, 107(58%) had DF, 71(39%) had DHF and 6(3%) had DSS.

The age of our patients ranged from 4 months to 90 years with a median of 29 years. There were 150 males and 75 females and among them 17(7.6%) were children (12 years or below). Approximately 87% of these patients were admitted during the winter season from October to December. The average delay in serological diagnosis was 2.3 days with a range of 0-7 days. All cases presented with fever (100%) and a majority also had an accompanying viral syndrome with headache (87%) and abdominal pain (27%). Systemic haemorrhagic manifestations were observed in 54% patients including petechiae (36%), epistaxis (18%) and gastro intestinal bleeding (9%). An unusual clinical feature, not reported in the previous epidemic in this region, was neurological involvement seen in twelve (5.4%) of our dengue patients. The neurological manifestations were altered level of consciousness (i.e. disorientation, lethargy, agitation or coma) in seven, seizures in five, neck rigidity and decerebration in two each, and hemiplegia/paresis in four. The plantar reflex

was abnormal in four patients. Glasgow Coma Scale score in our patients ranged from 3/15 to 15/15.

Abnormal laboratory findings in our patients included hyponatraemia (<134 mmol/l) in 60 (27%), metabolic acidosis in 17(7.6%), Disseminated Intravascular Coagulation (DIC) (D- dimer >0.5 µg/mL) in 12 (5.3%) and deranged liver function tests in 120(53.3%).

A total of 217(97%) patients recovered fully by the time of discharge and had no sequelae at one week of follow up. Six patients (2.6%) expired, one was in a vegetative state at the time of discharge while one left against medical advice and was lost to follow-up. Presence of shock (OR 2.9, 95% CI; 1.7-6.2), coma at presentation (OR 1.89, 95% CI; 1.02-3.3) and seizures (OR 1.6, 95% CI; 0.9-3.0) were important predictors of mortality.

Discussion

Overall incidence of Dengue cases admitted to our hospital has increased in the last three years. Though most cases were admitted during winter season but Dengue cases are seen all year round and this has been the trend for the last five years. We believe that Dengue infection is now endemic in our area. This needs to be confirmed in larger scale prospective studies.

Another concern is that we have seen more severe forms of Dengue infection in last two years as compared to 2000-2004. The increased frequency of DHF in secondary dengue viral infection is due to the presence of heterologous antibodies which result in antibody mediated immune enhancement by reactive memory cells. In the recent years we have observed more patients with DHF and DSS. It could be a selection bias because in a tertiary care center, complicated cases are referred. Previous publications report Den-1 as more common serotype while in a recent outbreak, Den-3 was reported. Available data does not correlate the severity of infection with particular serotype; however more research is needed to associate Dengue serotype with clinical presentation in our patients.⁸

We saw more patients with neurological involvement during last two years as compared to previous years. This may be due to a different sero-type or because may be we are seeing a wider spectrum of disease.

Overall mortality at our institution was comparable to international data but it may be high in other parts of

country. Most of the hospitals in the country do not have the laboratory facility available for sero-diagnosis of Dengue infection. Non availability of platelets, intensive care monitoring and ventilators may contribute to increased mortality in rural areas of the country (75% of country). The Government of Sindh reported that 4,541 patients were admitted to Karachi hospitals with suspected dengue and 50 due to DHF during 2006 epidemic. This may be a small proportion of Dengue infection in the province of Sindh.

Despite benign nature and low mortality related to Dengue infection, the disease is perceived as a serious condition among people. One study from Karachi (unpublished data) reported that 76% people were aware of dengue infection and perceive it as a serious disease. This is probably why most people go to hospital quickly when they develop a viral syndrome during dengue season. For most patients coming at Aga Khan University Hospital, the diagnosis was established within three days of onset of symptoms. Public perception of dengue needs to be clarified by educating the media and people.

Our findings are suggestive of a change in pattern and outcome of Dengue at our institution. Larger data set from all around the country is needed to comment on epidemicity and endemicity pattern of the Dengue in Pakistan. It is better to keep a strict vigilance on those diseases which have epidemic potential and can cause harm to public health.

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