

## CASE REPORT

## Adult Respiratory Distress Syndrome in Dengue -A Case Report

Amulya C. Belagavi<sup>1</sup>, H.S. Sunil<sup>1</sup>, U. Sudhir<sup>2</sup> and K. Punith<sup>3\*</sup>

<sup>1</sup>Department of Medicine, M.S. Ramaiah Medical Teaching Hospital, MSRIT Post, New BEL Road, Bangalore-560054, Karnataka, India, <sup>2</sup>Department of Critical Care, M. S. Ramaiah Medical Teaching Hospital, MSRIT Post, New BEL Road, Bangalore-560054 Karnataka, India and <sup>3</sup>Resident, M.S. Ramaiah Hospitals, MSRIT Post, New BEL Road, Bangalore-560054 Karnataka, India

**Abstract:** *Background:* Being on the verge of Dengue epidemic, there are newer and more complicated versions of the disease being reported worldwide. In the present article, we report a case of Dengue who progressed into Adult Respiratory Disease Syndrome during the illness. *Results:* The patient did well with the symptomatic treatment for the latter and with appropriate management of Dengue. With the other causes ruled out, Adult Respiratory Disease Syndrome was considered as part of the spectrum of the manifestation of Dengue. *Conclusion:* It is necessary to be aware of the entity as providing advanced critical care yields in good prognosis to the condition.

### Introduction

Dengue is one of the most important emerging tropical viral diseases of humans in the world today. Global incidence of dengue has grown dramatically in recent decades. The World Health Organization [WHO] estimates that there are 50 to 100 million infections yearly, including 50,000 Dengue Hemorrhagic Fever [DHF] and 22,000 deaths, mostly among children [1]. Pulmonary manifestations are rarely seen in DHF. Pleural effusion and pneumonitis have been described as rare complication of DHF. Of late, there are reports of Adult Respiratory Distress Syndrome [ARDS] with Dengue Fever [2-4]. In the present article, we report a similar case of dengue fever with ARDS. In the present epidemic scenario, it is advisable to be aware of the condition.

### Case History-I

27 year old male presented with history of high grade fever since 4 days, vomiting and loose stools since 1 day. Fever was associated with chills, rigors, headache, myalgia and retro-orbital pain. There was no history of rash or joint pain. Vomiting was non-projectile, several episodes, associated with nausea. There were no signs of meningeal irritation. He had no history of co-morbidities and his family and personal history were unremarkable. On examination, patient was afebrile, tachycardic [Pulse-124/min] and hypotensive [BP-90/56 mm Hg]. Per abdomen, patient had diffuse tenderness; otherwise systemic examination was essentially normal. Investigations revealed thrombocytopenia [Hemoglobin-16.4 g%, Total Leucocytes Count-5000

cells/mm<sup>3</sup>; neutrophils-56%, lymphocytes-38%, Eosinophils-4%, Monocytes-1%, Basophils-1%; Platelet count-115,000 cells/mm<sup>3</sup>. Hepatic enzymes were elevated [SGOT-433 IU, SGPT-206 IU]. Prothrombin time and activated partial thromboplastin time was elevated. Ultrasonography of the abdomen was normal. In view of low platelets and deranged coagulation profile, the patient was tested for dengue serology and IgM was positive [Bio Standard Diagnostics, Gurgaon, India]. The result was confirmed by Dengue PCR.

The patient was admitted and started on symptomatic therapy for which he responded well initially. But on third admission day, the patient became increasingly tachypneic and developed crepitations bilaterally. Chest X ray showed bilateral fluffy opacities, Serial arterial blood gas analysis showed PaO<sub>2</sub>/FiO<sub>2</sub> ratio of 200 suggestive of ARDS. The patient was intubated and was shifted under intensive care. He was put on pressure support ventilation and supportive medications. Antibiotics were given to prevent secondary nosocomial infections. Platelet transfusion was given as required. The patient improved over the next 3 days after which he was extubated. The patient was monitored in wards till the patient became asymptomatic and was discharged after seven days of hospitalization.

### **Discussion**

Dengue fever is a viral hemorrhagic fever caused by four flavivirus serotypes [DEN-1, DEN-2, Den-3 and Den-4] [5]. The WHO says some 2.5 billion people, two fifths of the world's population, are now at risk from dengue and estimates that there may be 50 million cases of dengue infection worldwide every year. The disease is now endemic in more than 100 countries [1]. Dengue is transmitted to humans by *Aedes aegypti* or more rarely *Aedes albopictus* mosquito infected with any one of the four flaviviridae. Each serotype is sufficiently different that there is no cross-protection; on the contrary, the more serious manifestations of the disease, Dengue hemorrhagic fever and Dengue Shock Syndrome occur more frequently on re-infection with a second serotype [5].

ARDS is a syndrome of inflammation and increased permeability associated with a constellation of clinical, radiologic, and physiologic abnormalities unexplained by elevations in left atrial or pulmonary capillary pressure [6]. The two widely used criteria for diagnosing ARDS is given in table 1. The etiology for ARDS is varied and Dengue is reported as a rare cause for this condition. Of late there are increasing number cases of ARDS being reported in dengue patients. Wang et al reported an incidence of 1.8% ARDS in their study involving 606 dengue patients in China [3]. All these patients had concomitant DHF. Sen et al reported a patient of dengue hemorrhagic fever who progressed into ARDS [2]. The patient recovered after mechanical ventilation and supportive treatment. Devarajan et al reported two cases of ARDS in dengue from Chennai, India [4]. The exact pathophysiology of ARDS in dengue is still unknown despite large scale research. Wang et al reported from their study that sepsis and upper gastrointestinal bleeding are the main cause for these patients to progress into ARDS.

Following Univariate analysis, they found that age, dyspnea, cough, Prothrombin time, activated partial thromboplastin time, aspartate aminotransferase, alanine aminotransferase, blood urea nitrogen, creatinine, albumin, renal insufficiency, acute renal failure, acute hepatic failure, UGI bleeding, and combination bacterial infection were significantly predictive variables associated with dengue patients with ARDS [3]. Management of ARDS in Dengue is similar to ARDS of any other etiology. Initial therapy is focused on maintaining adequate oxygenation and tissue perfusion through mechanical ventilation and fluid management [4]. Minimizing nosocomial complications, preventing MODS, and attenuating the inflammatory response also play prominent roles in ARDS management [6]. The supportive management for dengue also influences the outcome of the condition. It involves hydration and platelet transfusion as required. Newer and effective modalities for the treatment of ARDS in dengue are being researched. A recent study has proposed the role of non-invasive ventilation in improving the morbidity and mortality of ARDS in children with DHF/DSS in dengue endemic areas [7]. The role of mycophenolic acid [MPA], an immunosuppressive agent, is also being investigated in the treatment of dengue [8]. In the present case, the patient was diagnosed to have dengue hemorrhagic fever confirmed by positive dengue serology, thrombocytopenia, elevated hematocrit and signs of plasma leakage. The patient was later diagnosed with ARDS as he satisfied the standard criteria for the same. The etiology for ARDS was assumed to be dengue when a detailed evaluation for the known causes of ARDS turned out negative. The good prognosis of the patient could be attributed to patient's younger age, minimal delay in administering necessary treatment and antibiotic therapy to prevent nosocomial infections. In conclusion, clinicians in endemic and hyper-endemic areas need to be aware of this rare and unusual complication as an appropriate therapy without delay results in better outcome.

#### References

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\*All correspondences to: Dr. Punith Kempegowda, Clore Laboratory, University of Buckingham, Buckingham MK18 1EG UK. E-mail ID: drpunith@gmail.com