



Pathology Biology Section – 2011

G118 Sudden Death Due to Dengue Fever in an 8-Month-Old Baby

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The goal of this presentation is to present a case of postmortem diagnosis of dengue related death in a suspect sudden infant death syndrome.

This presentation will impact the forensic science community for the postmortem diagnosis of dengue fever like cause of death in a suspect case of SIDS.

Dengue virus (DENV) infection is caused by one of four antigenically distinct but related single stranded, positive-sense RNA viruses in the family Flaviviridae. This virus is transmitted by mosquito vectors, primarily *Aedes aegypti*. Four serotypes (DENV-1, DENV-2, DENV-3, and DENV-4) circulate worldwide. Dengue fever is one of the most significant re-emerging tropical diseases; it is now endemic in more than 100 countries in Africa, the Americas, the Eastern Mediterranean, South-East Asia, and the Western Pacific. South-East Asia and the Western Pacific are the most seriously affected. Dengue causes a severe flu-like illness and sometimes a potentially lethal complication called dengue hemorrhagic fever (DHF). Dengue hemorrhagic fever (DHF) is a potentially deadly complication that is characterized by high fever, often with enlargement of the liver, and in severe cases circulatory failure. The illness often begins with a sudden rise in temperature accompanied by facial flush, and other flu-like symptoms. The fever usually continues for two to seven days and can be as high as 41°C, possibly with convulsions and other complications. Frequently fatal cases of dengue death occur in the hospital. The clinical features of dengue fever vary according to the age of the patient. Infants and young children may have a fever with rash. Older children and adults may have either a mild fever or the classical incapacitating disease with abrupt onset and high fever, severe headache, pain behind the eyes, muscle and joint pains, and rash. Some cases develop much milder symptoms which can be misdiagnosed as influenza or other viral infection when no rash or retro-orbital pain is present. When dengue infections proceed to DHF symptoms, DHF causes vascular leak syndrome which includes fluid in the blood vessels leaking through the skin and into spaces around the lungs and belly. This fluid loss and severe bleeding can cause blood pressure to fall, then Dengue Shock Syndrome (DSS) sets in, which has a high mortality rate. In babies a pauci-symptomatic fatal case could be confused with a SIDS or a homicide. The case presented concerns an 8-month-old male infant was found unresponsive during a nap in his nursery school. The baby was quickly taken by ambulance but was declared dead on arrival at the hospital. Body was cold. The police took information by the nursery school teacher: three hours prior to death, the child was given plain water through a bottle before being put to sleep on a mattress on the floor, the baby frequently slept in prone position. The infant had been cared for by the nursery school since the age of three months. There was a history of mild fever illness for the previous weeks before the death and he was being treated with antipyretic drugs. The prosecutor began an investigation of the nursery school, arranged the autopsy on the body to clarify the exact mechanism of death: SIDS, accident, or homicide? The autopsy was performed six hours after death. The infant was well hydrated and well nourished, with body length of 68 cm and weighed 6920 g. He was pale with mild peripheral cyanosis

noted. Faint lividity was still noticeable at front part of body. There was blood-stained fluid oozing out of the nostrils and mouth on turning the body. There wasn't a rash or petechial hemorrhages on the skin. Fundal ophthalmoscopic examination didn't show retinal hemorrhage. No signs of external injury were detected, with the exception of puncture marks at the dorsum of both hands in a tentative of resuscitation. All the internal organs were congested. Pleural cavities contained 12 cc of yellow fluid. The lungs were edematous with areas of hemorrhage mainly seen on the right side. The upper airway was filled with froth and admixed with blood-stained fluid. Pericardial cavity contained 2 cc of yellow fluid. The heart showed few epicardial petechiae. Abdominal cavity contained 15 cc of yellow fluid. Stomach was empty. Liver was congested and had beefy appearance on cut sections. Other organs were unremarkable except of edema. Histopathologic examination showed in heart samples wide foci of early contraction bands necrosis, colliquative myocytolysis grade II, perivascular and interstitial infiltration of lymphocytes, monocytes and plasmacells. Lungs present alveolar septa mildly thickened by edema and capillary congestion, alveolar edema; lymphocytes, monocytes and plasma cells infiltrates septa and bronchial walls. In some fields, also numerous endoalveolar erythrocytes were observed. In liver, kidney, and spleen samples, there were perivascular mononuclear cells infiltration. An immunohistochemical study using antibody anti CD 3, CD4, CD 8, CD 20 and CD68 for the tipization of lymphocytes infiltrations was performed. Serological dengue screening using captured ELISA was positive for IgM but negative for IgG. The case showed that dengue infection may be asymptomatic or paucisymptomatic before a sudden death, so dengue fever should be included in the differential when a forensic pathologist must discern between a SIDS a homicide or a death related-dengue, particularly in endemic areas for



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dengue, like Malaysia.

Dengue Fever, Histological Findings, Postmortem Diagnosis