American Journal of Epidemiology and Infectious Disease, 2015, Vol. 3, No. 3, 45-49
Available online at http://pubs.sciepub.com/ajeid/3/3/1

DOI:10.12691/ajeid-3-3-1

Association between Clinical Profiles and Severe Dengue Infection in Children in Developing Country

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Received April 22, 2015; Revised June 07, 2015; Accepted June 22, 2015

Abstract **Background**: Dengue virus infection is endemic and is one of major causes of morbidity and mortality in children. The cause of mortality in children with dengue infection was not limited to shock but also caused by severe bleeding and organ dysfunction. This study aim to to examined clinical profiles of children with dengue infection and their association with severe dengue. **Methodology and principal findings**: Cross–sectional study of children with dengue virus infection admitted to Department of Child Health, Hasan Sadikin Hospital Bandung from April 2013 to September 2014. Subjects were patient age 1–<14 who fulfilled 2009 WHO criteria for dengue virus infection. Association between clinical profile and severe dengue infection was analyzed in two steps. After bivariate analysis, variable with p value <0.25 was included in the next step by logistic regression. P value <0.05 was consider significant. Of 451 subjects, 24.6% (n=111) had severe dengue infection. Dengue shock syndrome with or without other form of severe dengue was the most common complication and occured in 65.7% (n=73) of all severe dengue cases. Patient admitted ≥4th day of illness (OR 13.25 95%CI 3.45–50.86), persistent vomiting (OR 20.32 95%CI 7.41–55.74); hepatomegaly (OR 21.72 95%CI 7.73–61.01), platelet count <50.000/mm^3 (OR 26.54 95%CI 8.59–81.99), and leukocyte ≥5000/mm^3 at admission (OR 4.25 95%CI 1.55–11.65) were associated with severe dengue infection. **Conclusion:** Clinical manifestation of severe dengue infection was not limited to dengue shock syndrome. Patient admitted ≥4th day of illness, persistent vomiting, hepatomegaly, platelet count <50.000/mm^3 and leukocyte ≥5000/mm^3 at admission were associated with severe dengue infection in children.

Keywords: *Children, Clinical Profile, Severe Dengue*

Cite This Article: Masayu Amanda Ledika, Djatnika Setiabudi, and Meita Dhamayanti, "Association between Clinical Profiles and Severe Dengue Infection in Children in Developing Country." *American Journal of Epidemiology and Infectious Disease*, vol. 3, no. 3 (2015): 45-49. doi: 10.12691/ajeid-3-3-1.

1. Introduction

Dengue virus infection is one of the major causes of morbidity and mortality of children in endemic area. The disease is a rapidly spread, mosquito borne viral disease in Southeast Asia including Indonesia. [1] Although the proportion of dengue cases in children and mortality tend to decline over the years but the number of cases are rising. [2,3] Some older children had higher risk of developing shock, but young children had higher mortality rate. [3] This age–group differences in children call for a specific research in children. Clinical manifestation ranged from undifferentiated febrile illness to severe dengue infection including dengue shock syndrome (DSS), severe bleeding, and severe organ involvement. Mortality was not only caused by DSS but also by other severe manifestation. [4] World Health Organization in 2009 developed a diagnostic criteria to differentiate severe manifestation of dengue infection and to help early detection by warning signs. [5] Some of the warning signs such as lethargy and rise in hematocrit with rapid drop in platelet count may happen in late stages of dengue virus infection. Studies are limited to risk factors for dengue shock syndrome and fewer study discussed the clinical profile and wider manifestation of severe dengue infection in children.

This study aimed to find out the clinical profile of severe dengue infection and association between clinical factors and severe dengue infection in children.

2. Methods

This is a cross–sectional study conducted on patient with dengue virus infection at Child Health Department, Medical School, Universitas Padjadjaran/Hasan Sadikin General Hospital in Bandung from April 2013 to September 2014.

2.1. Patient Population

Children age 1–<14 who fulfilled 2009 WHO criteria for dengue virus infection with laboratory confirmation on either non-structural protein 1 (NS1) or anti dengue antibody (IgM, IgG, or both) positive for dengue infection was included in this study. Exclusion criteria were simultaneous infection, severe malnutrition, long term steroid use, hemolytic diseases such as thalassemia, and malignant diseases. (Figure 1)