



Prevalence of Pneumonia Severity in Children under 5 Years Old at Primary Health Care of Tambakrejo, Surabaya

Shofia Ihtasya¹, Retno Asih Setyoningrum^{2*}, Deby Kusumaningrum³

¹Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia.

²Department of Pediatrics, Faculty of Medicine, Universitas Airlangga/Dr. Soetomo General Hospital, Surabaya, Indonesia.

³Department of Microbiology, Universitas Airlangga/Dr. Soetomo General Hospital, Surabaya, Indonesia.

ABSTRACT

Introduction: Pneumonia is the world-leading cause of death in children under five years old and most prevalent in developing country. Proper initial diagnosis will determine further management, because pneumonia and severe pneumonia have different treatment. The aim of this study was to describe the prevalence of pneumonia severity in children under five years old at primary health setting.

Methods: This study was a cross – sectional descriptive study on medical records of children aged 2 to 59 months with pneumonia at primary health care of Tambakrejo, Surabaya from September to December 2017. Severity of pneumonia is classified using its clinical sign such as fast breathing, fever, chest indrawing, and general danger sign. The data were processed using Microsoft Office Excel and statistically analyzed with SPSS IBM 20.

Results: There were 31 respondents that were diagnosed with pneumonia at primary health care of Tambakrejo, Surabaya from September to December 2017. Most of the children diagnosed with pneumonia were aged 12 to 59 months (61.3%) and 22.6 % of the children had severe pneumonia.

Conclusion: Distribution of severity case of pneumonia at primary health care of Tambakrejo, Surabaya showed that there were more case of pneumonia with fast breathing than severe pneumonia or pneumonia with any general danger sign. Most of them were diagnosed at 12 to 59 months with a good nutritional status.

ARTICLE INFO

Article history:

Received 12 November 2020

Received in revised form 28
November 2020

Accepted 14 December 2020

Keywords:

Severity,
Pneumonia,
Child,
Primary health care,

* Correspondence: retnoseodijo@yahoo.co.id

JUXTA: Jurnal Ilmiah Mahasiswa Kedokteran Universitas Airlangga

p-ISSN: 1907-3623; e-ISSN: 2684-9453

DOI: 10.20473/juxta.V12I12021.26-28

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Introduction

Pneumonia is the world-leading cause of death in children under five years old and most prevalent in developing country.¹ In 2016, 880,000 children in the world died of pneumonia.² The incidence of pneumonia in Indonesia is also quite high, there are 503,738 toddlers affected by pneumonia and 16,819 of them are diagnosed with severe pneumonia.³

Early case management of pneumonia is classifying the severity of illness using its clinical sign such as fast breathing, fever, chest indrawing, and general danger sign. Proper initial diagnosis will determine further management, because pneumonia and severe pneumonia have different treatment. Children with fast breathing according to age were classified into pneumonia and children who had fast breathing with any general danger sign were classified into severe pneumonia.⁴

Indonesian government had made a program to reduce the mortality of pneumonia, named *Manajemen Terpadu Balita Sakit* (MTBS). In contrast, mortality rate of pneumonia increased twice in 2016-2017 in Indonesia. Several risk factors such as leukocytosis, congenital heart disease, and severe pneumonia can increase under-five years old mortality due to pneumonia.⁵ Various factors including incomplete vaccination, low weight for age, and environmental behavior can also affect morbidity and mortality of pneumonia in children.⁶

Based on the previous explanation, it is important to conduct a research about prevalence of pneumonia severity in children under five years old, thus the government can evaluate prevention programs that are already underway. The aim of this study was to describe the prevalence of pneumonia severity in under five years old children at primary health setting.

Methods

This study was a cross – sectional descriptive study on medical records of children aged 2- 59 months with pneumonia at primary health care of Tambakrejo, Surabaya from September – December 2017. A total sampling method was used. Variables in this research were severity of pneumonia, age, gender, and nutritional status.

Severity of pneumonia was diagnosed based on clinical symptoms of the patients, such as fever, tachypnea (according to age <2 month: >60x/minutes; 2-11 month: > 50x/minutes; 12-59 months: >40x/minutes), and danger signs (drink difficulties, lower chest wall indrawing, stridor, cyanosis, so on and so forth). Severe pneumonia was diagnosed if the patient had danger sign. Data about nutritional status was obtained from weight per age, then it was classified into 4 categories, such as malnutrition, poor nutrition, good nutrition, and over nutrition.

Data collected were age, gender, severity of pneumonia, and nutritional status. The data were put into Microsoft Office Excel and statistically analysed using SPSS IBM 20. This study was approved by Medical Ethics

Committee of Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia.

Results

31 children were diagnosed of pneumonia from September to December 2017 at primary health care of Tambakrejo, Surabaya. The major severity of pneumonia patients were pneumonia (24 patients, 77.4 %) and mostly were male (18 patients, 58.1%). There were 19 (61.3%) children diagnosed with pneumonia at age 12 to 59 months. In severe pneumonia, the major characteristic were male (5 patients) and under 12 months (4 patients). Most of the children had good nutritional status (61 %). Table 2 shows the distribution of pneumonia patients based on their severity.

Table 1. Characteristics of pneumonia patients at primary health care of Tambakrejo, Surabaya in September-December 2017.

No.	Characteristics	Frequency	Percentage
n = 31			
1.	Age		
	2- 11 months	12	38.7 %
	12 - 59 months	19	61.3%
2.	Sex		
	Male	18	58.1 %
	Female	13	41.9 %
3.	Pneumonia Severity		
	Pneumonia	24	77.4 %
	Severe Pneumonia	7	22.6%
4.	Nutritional Status		
	Malnutrition	7	23%
	Poor nutrition	5	16%
	Good nutrition	19	61%

Table 2. Characteristics of distribution of pneumonia severity in children under 5 years old at primary health care of Tambakrejo, Surabaya in September-December 2017.

Characteristics	Severity of pneumonia	
	Pneumonia n = 24	Severe Pneumonia n = 7
Age		
2 to < 12 months	8 (26%)	4 (13%)
12 to 59 months	16 (52%)	3 (9%)
Sex		
Male	13 (42%)	5 (16%)
Female	11 (35 %)	2 (7%)
Nutritional Status		
Malnutrition	4 (13%)	1 (3%)
Poor nutrition	15 (48%)	4 (13%)
Good nutrition		

Discussion

This study showed that 61.3% of the children were diagnosed with pneumonia at the age of 12 to 59 months. A study conducted in Nepal by Karki, *et al.* also revealed that most of the children were diagnosed with pneumonia at the age of 12-59 months.⁷ Another study in Jakarta and Bali showed different results.^{8, 9} Both of them showed that the highest incidence of pneumonia was at the age of less than 1 year old. In developing country, most episode of pneumonia happened in children at age 0-4 years old with incidence rate 0.28 episode per year.¹⁰ Children under 5 years old have a weak body defense mechanism compared to adults, because their body is still growing and developing.⁸

This study showed that there were more male children who were diagnosed with pneumonia (58.1%). Previous studies that were conducted in Jakarta and Surabaya had a similar result.^{8, 11} A study conducted in Jepara showed that male children were 1.4 times at risk for pneumonia.¹² The reason for the conclusion of this study was the difference of immune system between men and women and also smaller diameter of the respiratory tract in men than women.¹²

This study showed that 61% of the children had good nutrition status. Another study in Padang showed similar result.¹³ A study conducted in Bali showed that nutritional status was a significant factor for severity of pneumonia in children ($p = 0.02$; $OR = 2.176$).⁹ IgA has decreased in malnutrition, thus its function to protect the respiratory tract from incoming microorganisms cannot run well. Therefore, pathogens easily enter and increase the severity of the disease.¹⁴

This study showed that there were more cases of pneumonia than severe pneumonia cases. Previous studies that were conducted in Padang and Bali had similar results.^{13, 15} Severity of pneumonia in children can be affected by various conditions from the host and the environment, such as overcrowding, low maternal educational level, biomass fuels for cooking, incomplete immunization, lack of exclusive breastfeeding, and malnutrition.¹⁶

Conclusion

Distribution severity case of pneumonia at primary health care of Tambakrejo, Surabaya showed that there were more case of pneumonia with fast breathing than severe pneumonia or pneumonia with any general danger sign. Most of them were diagnosed at 12 to 59 months with a good nutritional status.

CONFLICT OF INTEREST

The author stated there is no conflict of interest in this study.

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