

Relationship Between Symptoms Duration and Acute Otitis Media Stage Patients at ENT Clinic of General Hospital University Muhammadiyah Malang

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Abstract

Otitis media ranked fifth in the global burden of disease and became the second leading cause of hearing impairment. Medical records data from the Ear Nose Throat (ENT) clinic of Muhammadiyah Malang University General Hospital (MMUGH) indicated that unspecified Acute Otitis Media (AOM) was the sixth most common disease in 2023. The duration of symptoms could indicate the stage of AOM, allowing for its elimination with prompt treatment. The objective of this research was to determine the relationship between symptom duration and the stage of AOM in patients at the ENT Clinic of MMUGH. The data used were primary data collected through interviews using a questionnaire. The analysis technique employed the Spearman correlation test and the sampling technique used purposive sampling. Statistically, there was no significant relationship between the symptoms duration and the stage of AOM.

Keywords: Acute Otitis Media, Duration symptoms, AOM stage.

INTRODUCTION

Acute otitis media (AOM) was the most common infectious disease related to the health of the auditory system, especially in children and could occur at any age. In AOM, the common symptoms found included ear pain (otalgia), ear discharge (otorrhea), a feeling of fullness in the ear, hearing loss, and tinnitus¹. The diagnosis of AOM had become a common matter and ranked second in emergency departments after upper respiratory tract infections. About 1.23 billion people worldwide were affected by otitis media, making it the fifth leading cause of global disease burden and the second leading cause of hearing loss. Furthermore, otitis media was the most common chronic disease in low- and middle-income countries compared to high-income countries. The highest incidence was reported in Sub-Saharan Africa and South Asia².

Indonesia ranked fourth among countries with the highest incidence of AOM (4.6%), following Sri Lanka (8.8%), Myanmar (8.4%), and India (6.3%)³. Complications from AOM could potentially lead to tympanic membrane rupture, chronic suppurative otitis media, acute mastoiditis, and even dangerous conditions such as intracranial abscesses and meningitis⁴. According to Lestari et al. in 2018 the incidence of AOM among adults which was initially predicted to be low, turned out to be relatively higher in this study⁵.

The researchers studied AOM in patients aged 17 and above, focusing on the duration of AOM symptoms and their stage, in order to minimize the progression of acute AOM which could reduce its incidence. This study was conducted at the Ear Nose Throat (ENT) clinic, Muhammadiyah University of Malang General Hospital (MUMGH) which was expected to represent AOM data that was not yet available in Malang.

METHODE

The research used an observational analytical study design with a cross-sectional approach. The population in this study consisted of all patients at the ENT Clinic of MUMGH. The data used was primary data collected through questionnaires from patients with AOM in July 2024. The sampling technique used was purposive sampling, and 25 patients were selected as respondents. The inclusion criteria, namely patients diagnosed with AOM from any stage of the illness and those newly diagnosed with AOM at any stage, aged 17 years or older. The exclusion criteria were patients whose questionnaires were incomplete, meaning that they did not contain one of the following: patient identity and age, anamnesis (patient complaints), physical examination results and diagnosis.

RESULT

Table 1. Distribution of Acute Otitis Media Samples

Gender	Number	Percentage (%)
Male	12	48%
Female	13	52%
Total	25	100%

(Primary data, 2024)

Table 2. Distribution of Samples Based on Age

Age Group	Number	Percentage (%)
17-25 Years	9	36%
26-35 Years	6	24%
36-45 Years	2	8%
46-55 Years	4	16%
56-65 Years	4	16%
>65 Years	0	0%
Total	25	100%

(Primary data, 2024)

Table 3. Distribution of Duration Acute Otitis Media Symptoms

Duration of Symptoms	Number	Percentage (%)
1 Day	2	8 %
2 Days	4	16 %
3 Days	2	8 %
4 Days	2	8 %
5 Days	2	8 %
7 Days	3	12 %
14 Days	3	12 %
21 Days	1	4 %
30 Days	2	8 %
34 Days	1	4 %
35 Days	1	4 %
90 Days	1	4 %
120 Days	1	4 %
Total	25	100 %

(Primary data, 2024)

Table 3 shows the distribution of AOM symptoms duration symptoms with the most common duration was 2 days (16%) then followed by 7 days and 14 days (12%).

Table 4. Distribution of Acute Otitis Media Stadium

Acute Otitis Media Stadium	Number	Percentage (%)
Tube Occlusion	6	24%
Hyperemia	4	16%
Suppuration	12	48%
Perforation	1	4%
Resolution	2	8%
Total	25	100%

(Primary data, 2024)

Table 5. Cross-tabulation of Symptom Duration and Acute Otitis Media Stage

Stage	Duration of Symptoms		
	Mean	Minimum	Maximum
Tubal Occlusion	27	1	120
Hyperemia	9,75	2	30
Suppuration	16,83	1	90
Perforation	14	14	14
Resolution	20	5	35

(Primary data, 2024)

The longest average duration of symptoms was in the occlusion of the tube stage, lasting 27 days. This indicated that negative pressure in the middle ear could persist for up to 3 months.

Table 6. Output analysis results

Independent Variable	Stage		
	r	p-value	Explanation
Duration of Symptoms	0.203	0.330	No Relationship

(Primary data, 2024)

DISCUSSION

The percentage of females (52%) diagnosed with AOM was slightly higher than males (48%). This finding aligns with research by Praptika et al. in 2020 at RSUD Wangaya Denpasar, where the female percentage was higher than males (52.8% vs. 47.2%)⁶. Several studies suggest that the immune system in women is not as strong as in men, which may lead to women being more susceptible to infections caused by certain pathogens compared to men. Additionally, a study by Nurrokhmawati et al. (2020) found that most AOM cases were females¹. Eziyi et al. (2018) mentioned a risk ratio by 1.2:1 for AOM based on gender, though other studies have indicated that gender does not significantly affect the incidence of AOM⁷.

In this study, the age group most affected by AOM was 17-25 years (36%). This is consistent with research by Lestari et al. (2018), which showed that the highest incidence of AOM was in the 17-24 age group (21.0%) and a study by Nurrokhmawati et al. (2020) also found that the majority of AOM cases were between 17-25 years (29.7%)^{1,5}. Acute otitis media is more common in children due to the shorter eustachian tube and underdeveloped immune systems, making them more vulnerable to infections compared to adults⁴.

There was no statistically significant relationship between symptom duration and stage in this study. Acute otitis media is often associated with a current or recent upper respiratory tract infection, commonly referred to as the flu. This upper respiratory

infection can lead to problems in the Eustachian tube, causing fluid or mucus blockage from the infection. When the Eustachian tube is not functioning properly, fluid can become trapped in the middle ear cavity and become infected. Other risk factors for AOM include exposure to tobacco smoke, a history of daycare attendance (which increases virus transmission in children), a family history of AOM, and atopy (such as eczema, asthma, and seasonal allergies). These factors contributing to AOM can be influenced by individual habits and environments, which may explain the lack of relationship between the symptoms duration and stage disease⁸.

Geng et al., 2020 explained that a study on mutagenesis characteristics and the characterization of mutants in a mouse model identified many genes as predisposition factors for OM, especially those involved in immune responses and inflammation related to cellular function in mucin production, mucociliary transport, as well as the development of the middle ear cavity and craniofacial structures⁹. Genetic studies showed consistency between genes identified in both humans and mice, with polymorphisms or variants of orthologs in human genes like TLR2, TLR4, FBXO11, and BPIFA1, which were also found significantly associated with OM in humans. Disease-related genes for syndromes associated with OM have also been identified in mice¹⁰. Genetic differences in immunity among individuals could also explain the variations between symptom duration and the stage of AOM in patients.

CONCLUSION

There is no relationship between the duration of symptoms and the stage of AOM in patients at the ENT clinic MUMGH. Although no relationship was found between symptom duration and the stage of AOM, preventive measures should still be taken immediately if symptoms of AOM appear to avoid complications.

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