Healthy Tadulako Journal (Jurnal Kesehatan Tadulako)
Vol. 11 No. 2, April 2025
P-ISSN : 2407-8441/e-ISSN : 2502-0749

Original Research Paper

Characteristics of Tonsillopharyngitis Patients at Ibnu Sina Hospital Makassar from January 2023 to May 2024

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Page : 248-256

Keywords:
Tonsillopharyngitis, patient characteristics, antibiotic management

Article History:
Received: 2024-11-12
Revised: 2024-11-25
Accepted: 2025-04-30

Published by:
Tadulako University,
Managed by Faculty of Medicine.
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Phone (WA): +6285242303103
Address:
Jalan Soekarno Hatta Km. 9. City of Palu, Central Sulawesi, Indonesia

ABSTRACT

Background: Upper respiratory tract infections in children often lead to tonsillopharyngitis, which is caused by viruses (such as adenovirus and rhinovirus) or bacteria, especially Group A beta-hemolytic streptococcus (GABHS). Predisposing factors include poor oral hygiene, consumption of certain foods, and inadequate treatment. **Objective**: To determine the characteristics of age, gender, type of food, clinical manifestations, laboratory results, and management provided to tonsillopharyngitis patients at Ibnu Sina Hospital, Makassar. **Results**: Of the 86 tonsillopharyngitis patients recorded at Ibnu Sina Hospital, Makassar, between January 2023 and May 2024, the majority of patients were female (60.47%), aged 20-44 years (46.51%). Most patients consumed regular food (74.42%), and the most common clinical symptoms were fever (87.21%), sore throat (75.58%), and hyperemia of the tonsils and pharynx (100%). Laboratory examination showed leukocytosis in 53.49% of patients, and the most common antibiotic treatment was ceftriaxone (55.81%), followed by cefixime (25.58%) **Conclusion**: The study at Ibnu Sina Hospital, Makassar, concluded that the majority of tonsillopharyngitis patients are female, aged 20-44 years, and consumed regular food. Most patients experienced hyperemia of the tonsils and pharynx, leukocytosis, and were treated empirically with the antibiotic ceftriaxone based on clinical manifestations.

Introduction

Acute Respiratory Infections (ARI) are contagious diseases that represent a leading cause of death among children under the age of five worldwide, with nearly 7 million child deaths each year attributed to this condition. Most children experience one or more episodes of acute respiratory infection annually, with an average of 6 to 8 episodes per year[1].

The tonsils are part of the immune system and play an important role in protecting the body from infections. The palatine tonsils, located on the sides of the pharynx, are key components of Waldeyer's Ring. Waldeyer's Ring consists of lymphoid tissue found in the oral cavity and includes several types of tonsils: the adenoid tonsil (pharyngeal), palatine tonsils (faucial), lingual tonsils (at the base of the tongue), and the tubal tonsils (located in the pharyngeal wall near the Eustachian tube). The palatine tonsils, positioned on the left and right sides at the back of the throat between the palatoglossal and palatopharyngeal arches, are the largest lymphoid tissues in the ring. Their primary function is to help fight infections and maintain fluid balance in the body. Bacteria that enter through the nose or mouth are filtered by these tonsils. Inflammation of the tonsils and pharynx is referred to as tonsillopharyngitis[1].

Tonsillopharyngitis, a type of Acute

Respiratory Infection (ARI), is an inflammation of the tonsils and pharynx. Several predisposing factors contribute to this condition, including the consumption of certain foods, poor oral hygiene, habitual mouth breathing due to nasal obstruction, weather changes, and inadequate treatment of previous episodes of tonsillopharyngitis[2,3].

The World Health Organization (WHO) does not publish specific data on the annual number of tonsillitis cases worldwide. However, WHO estimates that approximately 287,000 children under the age of 15 undergo tonsillectomy (tonsil surgery) each year, with or without adenoidectomy. Of these, around 248,000 children (86.4%) undergo tonsiloadenoidectomy, while the remaining 39,000 children (13.6%) undergo tonsillectomy alone[4].

Tonsillopharyngitis occurs in approximately 10.7% of children who visit outpatient clinics with acute respiratory symptoms, with a prevalence of 4,017.9 per 100,000 population. Acute tonsillopharyngitis accounts for more than 6 million visits each year by children under the age of 15, along with an additional 1.8 million visits by adolescents and young adults aged 15 to 24 years[5].

Based on research conducted by Muthanna et al., the prevalence of Group A Streptococcus tonsillopharyngitis among children and adults is estimated to be 37% in the United States, 26.2% in Canada, 12% in Brazil, 14.2% in Argentina, 2.2% in the United Kingdom, 21.4% in France, 14.3% in Turkey, 10.6% in Serbia, 26.1% in South Africa, 36.6% in Yemen, 40.0% in Saudi Arabia, 42.2% in Egypt, 25.3% in Pakistan, 9.2% in India, 8.0% in Thailand, 4.4% in Japan, and 14% in Indonesia[6].

The habit of consuming foods such as fried snacks, spicy foods, and cold beverages can have a negative impact on tonsil health, increasing the risk of irritation and infection that may eventually require surgical intervention. Studies by Vissing et al. and Kvaerner et al. have shown that junk food consumption in preschool children is associated with an increased risk of upper respiratory tract infections and tonsillopharyngitis. Throat infections caused by Group A Streptococcus require treatment with oral beta-lactam antibiotics such as amoxicillin. For patients with allergies, alternatives such as cephalosporins, erythromycin, clindamycin, or azithromycin may be prescribed[7].

The high prevalence of pharyngitis, particularly among children, underscores the importance of proper management to prevent serious complications that may arise from inadequately treated infections. Although pharyngitis is commonly caused by Group A beta-hemolytic Streptococcus bacterial infections, inappropriate treatment whether in antibiotic selection or patient adherence—can contribute to antibiotic resistance and long-term complications. Furthermore, despite the established standard of antibiotic therapy for bacterial pharyngitis, variations in treatment practices still exist across hospitals and primary healthcare centers, highlighting the need for further evaluation. This study is crucial to provide a clearer overview of antibiotic usage patterns in Indonesia and to assess their effectiveness in alleviating symptoms and preventing resistance. Therefore, this research has the potential to make a valuable contribution to the development of more appropriate treatment guidelines, as well as to raise awareness about the importance of accurate diagnosis and appropriate therapy to reduce morbidity and complications of pharyngitis in children.

Based on the background and the observed increase in the prevalence of tonsillopharyngitis, the researcher intends to conduct a study to answer the following question:

"What are the characteristics of age, gender, types of food consumed, clinical manifestations, laboratory findings, and

treatments administered to tonsillopharyngitis patients at Ibnu Sina Hospital Makassar?"

Materials and Methods

Research Design

This study employed a descriptive design with a cross-sectional approach, aiming to describe the pattern of antibiotic use in pediatric patients diagnosed with tonsillopharyngitis. This approach was conducted to obtain a snapshot or description of the condition at a specific point in time. The study was conducted at Ibnu Sina YW-UMI Hospital Makassar during the 2023–2024 period using secondary data from patient medical records. The focus of the study was to describe the characteristics of antibiotic use based on variables such as age, gender, leukocyte count, clinical manifestations, as well as the type and management of antibiotics administered.

Sample

The study population included all ENT clinic patients at Ibnu Sina YW-UMI Hospital Makassar who were diagnosed with tonsillopharyngitis during the 2023–2024 period. The research sample was determined using purposive sampling, with a total sample size of 86 patients, calculated using Slovin's formula to obtain a representative sample. Inclusion criteria included patients aged 5 to 18 years, diagnosed with tonsillopharyngitis, and having complete medical records containing information on gender, leukocyte count, clinical manifestations, and antibiotic management. Exclusion criteria were patients without complete medical records or those who did not receive antibiotic treatment.

Data Collection Technique

Data were collected after obtaining official permission from Ibnu Sina YW-UMI Hospital Makassar. The data source used was patient medical records of those who had undergone treatment at the hospital during the study period. Collected data included age, gender, leukocyte count results, clinical manifestations, and the types of antibiotics used in treatment. The data collection process was carried out by carefully reviewing the medical records of patients who met the inclusion and exclusion criteria.

Data Analysis Technique

Data analysis was performed descriptively to provide an overview of antibiotic use patterns in pediatric tonsillopharyngitis patients. The data obtained from the medical records were processed using Microsoft Excel to calculate the frequency and percentage of each research variable. The analysis results were then presented in the form of frequency and percentage distribution tables to facilitate interpretation and understanding of antibiotic use patterns among the patients.

Ethical Consideration

This study was approved by the Research Ethics Committee (REC) of Universitas Muslim Indonesia with ethical approval valid until July 29, 2025. The ethics approval letter has the reference number 328/A.1/KEP-UMI/VII/2024. The research was conducted in accordance with ethical research principles, including maintaining the confidentiality of patient data and ensuring that the data were used solely for research purposes as per the granted approval.

Results

This study utilized secondary data obtained from the medical records of tonsillopharyngitis patients registered at Ibnu Sina Hospital Makassar during the period from January 2023 to May 2024, based on predetermined inclusion and exclusion criteria. The results of this study are presented in tables accompanied by the following explanations. In addition, data analysis was performed to identify patterns related to patient demographics, clinical presentations, and treatment outcomes,

providing a comprehensive overview of the characteristics and management of tonsillopharyngitis cases within the study period. This approach ensures that the findings are systematically structured and can serve as a reference for future clinical evaluations and interventions.

Table 1. Characteristics of Tonsillopharyngitis Patients

Variable	Freq	Percentage (%)
Age		
Infant (0–1 year)	2	2.33
Toddler (2–5 years)	10	11.6
Children (6–12 years)	17	19.77
Adolescent (13–19 years)	8	9.30
Young Adult (20–44 years)	40	46.51
Middle-Aged Adult (45–64 years)	6	6.98
Elderly (> 65 years)	3	3.49
Gender		
Male	34	39.53
Female	52	60.47
Dietary Patterns		
Oily Food	1	1.16
Spicy Food	5	5.81
Instant Food	12	13.95
Cold Beverages	4	4.65
Regular Meals	64	74.42
Clinical Manifestations		
Fever	75	87.21
Sore Throat	65	75.58
Cough	51	59.30
Chills	19	22.09
Decreased Appetite	35	40.70
Tonsillar Enlargement	65	75.58
Hyperemia of Tonsils and Pharynx	86	100.00
Crypt Surface Enlargement	3	3.49
Detritus	2	2.33
Pharyngeal Wall Thickening	1	1.16
Submandibular Gland Enlargement	4	4.65
Leukocyte Differential Count		
Leukocytosis (> 10,000/mm³)	46	53.49
Normal (5,000 – 10,000/mm³)	29	33.72
Leukopenia (< 5,000/mm³)	11	12.79
Total	86	100.00

Source: *Secondary Data, 2024.*

Table 1 illustrates the characteristics of tonsillopharyngitis patients based on age, gender, dietary patterns, clinical manifestations, and leukocyte count results. The majority of patients were in the young adult age group (20–44 years) with a percentage of 46.51%, while the infant group (0–1 year) was the least represented at 2.33%. Female patients were more dominant (60.47%) compared to male patients (39.53%). The most commonly consumed type of food was regular meals (74.42%), while oily foods were the least consumed (1.16%). The main clinical manifestations found included hyperemia of the tonsils and pharynx (100%), fever (87.21%), sore throat (75.58%), and tonsillar enlargement (75.58%). Based on leukocyte differential count results, most patients experienced leukocytosis (>10,000/mm³) at 53.49%, followed by normal results (33.72%), and leukopenia (<5,000/mm³) at 12.79%.

Table 2. Characteristics of Tonsillopharyngitis Patients Based on Antibiotic Management

Antibiotic Class	Type of Antibiotic	Freq	(%)
Penicillin	Amoxicillin	10	11.63
First-Generation	Cefadroxil	1	1.16
Cephalosporins	Cephalexin	0	0.00
Third-Generation	Cefixime	22	25.58
Cephalosporins	Ceftriaxone	48	55.81
Macrolides	Erythromycin	0	0.00
	Clindamycin	0	0.00
	Azithromycin	2	2.33
Fluoroquinolones	Levofloxacin	3	3.49
Total		86	100.00

Source: *Secondary Data, 2024.*

Table 2 describes the distribution of antibiotic management in tonsillopharyngitis patients based on antibiotic classes and types. Ceftriaxone, a third-generation cephalosporin, was the most frequently used antibiotic, accounting for 55.81% of cases. Another commonly used antibiotic was Cefixime (25.58%) from the same class. Amoxicillin, a penicillin-class antibiotic, was used in 11.63% of patients, while the use of other antibiotics such as Azithromycin (2.33%) and Levofloxacin (3.49%) was less common. Some antibiotics, including Cephalexin, Erythromycin, and Clindamycin, were not used at all during the study period. This indicates a tendency toward the selection of certain antibiotics that are more commonly prescribed

for tonsillopharyngitis patients at Ibnu Sina Hospital Makassar.

Discussion

Age of Tonsillopharyngitis Patients

The results of this study showed that the highest proportion of tonsillopharyngitis patients was in the young adult age group (20–44 years), accounting for 46.51%. These findings are consistent with the study conducted by Muthanna et al. (2021) on the prevalence of pharyngitis and its associated factors in adults with sore throat. Their study reported that 60.5% of adults experienced sore throat, with pharyngitis being more common in the 18–28 age group. Another study by Maudrell et al. (2011) also found that the highest incidence of pharyngitis among adults occurred in the 18–30 age group. Several factors may contribute to the high incidence in this age group, including greater exposure to infections due to higher levels of social activity, as well as stress or unhealthy lifestyle habits that can weaken the immune system. Meanwhile, Mehta et al. (2017) reported that pharyngitis can occur across all age groups but is particularly prevalent during school age, possibly due to high transmission rates among children[8–10].

Gender of Tonsillopharyngitis Patients

The results of this study showed that 60.47% of patients diagnosed with tonsillopharyngitis were female, while the remaining 39.53% were male. These findings are consistent with research conducted by Shalihat et al. (2015) regarding the relationship between age and gender in tonsillitis patients, which found that 56.4% of tonsillitis cases occurred in females. Similarly, the study by Rojas et al. (2020) indicated that females are often more susceptible to respiratory tract infections, including tonsillopharyngitis. Several factors may contribute to this difference, such as biological and hormonal variations between men and women, which can influence immune system responses. In addition, women tend to seek medical care earlier than men, which may also affect the number of recorded diagnoses[11].

Types of Food for Tonsillopharyngitis Patients

In addition to inadequate treatment, several factors can contribute to the development of chronic tonsillitis, including poor oral hygiene, physical fatigue, and consumption of food prepared without proper attention to cleanliness. The results of this study showed that 74.42% of the foods consumed by patients with tonsillopharyngitis were regular foods. This finding aligns with the study conducted by Sari et al. (2014) on the triggering factors of tonsillitis, which found that 65% of tonsillitis patients did not have a habit of consuming spicy foods. Similarly, research by Bintang et al. (2022) on food consumption and tonsillitis symptoms revealed that 54.1% of the respondents had a habit of consuming high-risk foods, while 45.9% did not. The causes of tonsillopharyngitis are not solely related to diet but are also influenced by other factors such as bacterial and viral infections, recurrent infections, exposure to cigarette smoke, physical fatigue, weather changes, and poor dental and oral hygiene[12–14].

Clinical Manifestations of Tonsillopharyngitis Patients

The results of this study showed that 100% of patients with tonsillopharyngitis experienced hyperemia of the tonsils and pharynx, and 87.21% had fever. This finding is consistent with the study conducted by Diana et al. (2014) on the diagnostic accuracy of the modified Centor scoring system in patients with acute Group A beta-hemolytic streptococcal pharyngitis. Their study found that all subjects (100%) exhibited pharyngeal hyperemia, 90.1% had swollen tonsils with hyperemia, 75.9% had tonsillar exudates, and 72.2% had pharyngeal exudates. A similar study by Husna

(2018) on the clinical presentation of acute tonsillopharyngitis reported that fever and cough were the most common complaints, both occurring in 100% of respondents.

Hyperemia of the pharynx and tonsils is caused by viral or bacterial infections that trigger a local inflammatory response. The pathogens infiltrate the epithelial layer, leading to epithelial erosion and subsequent reaction of the superficial lymphoid tissue, resulting in inflammatory congestion characterized by polymorphonuclear leukocyte infiltration. In the early stage, hyperemia is observed, followed by edema and increased secretions. During hyperemia, the blood vessels in the mucosal walls dilate. Yellow, white, or grayish obstructions may form in the follicles or lymphoid tissue. The lymphoid follicles and patches on the posterior pharyngeal wall or the lateral areas become inflamed and swollen. If not managed promptly, this inflammatory process may progress to more severe complications, such as peritonsillar abscess, airway obstruction, or systemic infection, highlighting the importance of early detection and appropriate treatment to prevent further clinical deterioration[15,16].

Leukocyte Count Examination in Tonsillopharyngitis Patients

The results of this study showed that 53.49% of patients with tonsillopharyngitis experienced leukocytosis. This finding is consistent with the study conducted by Hikma et al. (2023) on the leukocyte count and differential in patients with acute respiratory infections, which reported that 67.7% of patients had leukocytosis, while 32.2% had normal leukocyte counts. Leukocytes, also known as white blood cells, are nucleated cells that play a crucial role in the body's defense system by preventing the entry of foreign substances (antigens) that can cause disease. Leukocytes protect the body through two primary mechanisms: phagocytosis, which involves eliminating pathogens such as bacteria and viruses, and the activation of the body's immune response. Leukocytes can specifically target known antigens, such as bacterial and viral pathogens, as well as other harmful foreign substances[17,18].

Antibiotic Management of Tonsillopharyngitis Patients

Antibiotic therapy is recommended for patients who present with signs and symptoms of tonsillopharyngitis along with laboratory confirmation of Group A Streptococcus (GAS) as the causative pathogen. To date, GAS resistance to penicillin has not been reported. Given its narrow spectrum, low cost, and proven effectiveness in preventing acute rheumatic fever (ARF), penicillin remains the drug of choice for treating GAS pharyngitis. Amoxicillin is a more palatable suspension compared to penicillin V and is equally effective when administered as a once-daily dose (50 mg/kg, maximum 1000 mg) for 10 days. Benzathine penicillin G may be administered as a single intramuscular (IM) injection when adherence to oral therapy is questionable; however, this injection can be painful. For patients with non-anaphylactic penicillin allergies, first-generation cephalosporins such as cephalexin are appropriate alternatives. Clindamycin or macrolides (e.g., azithromycin) may be used for patients with anaphylactic reactions or type 1 hypersensitivity to penicillin[19].

The study results showed that 55.81% of tonsillopharyngitis patients were treated with ceftriaxone, a third-generation cephalosporin antibiotic. This finding is consistent with the study conducted by Tandi et al. (2018) regarding antibiotic prescriptions for respiratory infections, which indicated that ceftriaxone was the most commonly used antibiotic, prescribed in 73.69% of cases. In their study, involving 38 patients with respiratory infections who were hospitalized, three types of antibiotics were administered:

ceftriaxone (28 patients, 73.69%), cefotaxime (8 patients, 21.05%), and cefixime (2 patients, 5.26%). Ceftriaxone was used more frequently than cefotaxime and cefixime. The cephalosporin class is commonly used as a single antibiotic therapy in several studies. Single antibiotic therapy can reduce treatment costs and minimize the risk of drug interactions and side effects. Kumar et al. (2021) also reported using ceftriaxone in more than 50% of respiratory infection cases in their study, where ceftriaxone, as a third-generation cephalosporin, is effective against most aerobic Gram-positive and Gram-negative organisms. A study by Najmah (2022) in Indonesia similarly found that third-generation cephalosporins were the most frequently used antibiotics in pediatric patients with respiratory infections due to their lower risk of allergic reactions and the convenience of once-daily dosing[20–23].

Conclusion

Based on the results of this study, it can be concluded that the majority of tonsillopharyngitis patients at Ibnu Sina Hospital Makassar were predominantly female and in the young adult age group (20–44 years). Most patients consumed a regular diet, exhibited hyperemia of the tonsils and pharynx, and showed signs of leukocytosis. Ceftriaxone was the primary choice of antibiotic, and antibiotic administration was generally performed empirically based on clinical manifestations without waiting for laboratory test results.

It is recommended to strengthen educational programs on throat health and the importance of a healthy diet, implement strict protocols for antibiotic use, and develop more comprehensive diagnostic systems to distinguish bacterial from viral infections. Further research is needed to explore the contributing factors to the prevalence of tonsillopharyngitis. When examining patients with tonsillopharyngitis, it is important to record dietary patterns. Future studies on the types of foods that may influence the incidence of tonsillopharyngitis are advised to include patient interviews.

Acknowledgment

The author would like to express sincere gratitude to all research subjects and all parties who have contributed to the successful completion of this study. The researcher also extends special thanks to the Research and Community Service Institute of the Faculty of Medicine, Universitas Muslim Indonesia, for providing valuable support and facilitation throughout the research process.

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