International Journal of Medical Science and Clinical Research
www.journalofmedical.com
Online-ISSN: 2664-7761, Print ISSN: 2664-7753
Received: 01-10-2022, Accepted: 16-10-2022, Published: 04-11-2022
Volume 4, Issue 2, 2022, Page No. 51-56

Characteristics of chronic tonsillitis patients in children in the ear nose throat– head and neck hospital of the Indonesian Christian University in 2019

Lina Marlina[1*], Wendy Hendrika[1], Indah Pujiati Daeng Tanang[1], Haryogi Maulana[2], Arinza Arum Sayekti[2]

[1] Medical Faculty, Universitas Kristen Indonesia, Jakarta, Indonesia

[2] General Hospital, Universitas Kristen Indonesia, Jakarta, Indonesia

Abstract

Tonsillitis is one of the upper respiratory tract infections (ARI) that often occurs in children. Chronic tonsillitis occurs because of a follow-up attack on the tonsils that have experienced previous inflammation caused by bacteria or viruses. This study aimed to determine the characteristics of chronic tonsillitis in patients in the ENT-KL section of UKI Hospital Jakarta in 2019. The study used a descriptive research design. The subjects of this study were 59 children under 18 years old who suffered from chronic tonsillitis, went to the UKI Hospital for the ENT-KL section, had complete medical records, and had not received a tonsillectomy/tonsil size was not T0-T0. The data was taken from the medical records of patients diagnosed with chronic tonsillitis in the ENT-KL section of the UKI Hospital Jakarta at the time of the study in 2019. The data were analyzed descriptively using the Statistics Product and Service Solution (SPSS) program. Based on medical record data, it was found that the most chronic tonsillitis patients in children were in the age group 3-9 years as many as 45.8%, male sex as much as 54.2%, and the main complaint of repeated swallowing pain as much as 50.8%, tonsil size T3-T3 as much as 47.5%. The conclusion of this study is that the characteristics of chronic tonsillitis patients in children are primarily found in men aged 3-9 years, with the main complaint of repeated swallowing pain with T3-T3 tonsil size.

Keywords: chronic tonsillitis, children, chief complaint

Introduction

More and more, the emergence of various infectious diseases or other diseases from day to day, one of which is tonsillitis, often known as tonsils or tonsils. Tonsillitis is inflammation of the palatine tonsils that occurs mainly in children and can occur at any age. Tonsillitis usually occurs in children aged 2-3 years and increases at 5-12. Generally, children do not realize that their tonsils have experienced hypertrophy, even though some have long felt tonsillitis symptoms, which are constantly recurring, such as pain when swallowing accompanied by fever in the body [1].

Complications of tonsillitis are classified into suppurative complications and non-suppurative complications. Suppurative difficulties consist of peritonsillar abscess, parapharyngeal abscess, and retropharyngeal abscess. In comparison, non-suppurative complications include scarlet fever, acute rheumatic fever, and glomerulonephritis. Peritonsillar spots commonly occur in patients with recurrent tonsillitis or chronic tonsillitis who are not receiving adequate antibiotic treatment [2, 3].

Complications of abscess can be hazardous if it ruptures spontaneously, especially during sleep which can lead to aspiration pneumonia and pyemia. Death can occur in children with severe pneumonia [4, 5]. The number of cases of chronic tonsillitis at 287,000 children under 15 years, and in Continental Europe, recurrent tonsillitis is around 11% [2, 6]. The prevalence of chronic tonsillitis in children under 18 years of age was 24.9% of 1000 children [3, 7]. In Russia, the majority of chronic tonsillitis in families was found in 335 children aged 1-15 years from 321 families experiencing chronic tonsillitis [6]. In Indonesia, based on the epidemiological survey of ear, nose, and throat (ENT) diseases in 7 provinces in Indonesia in 1994-1996, the prevalence of chronic tonsillitis was 3.8%, the second highest after acute nasopharynx (4.6%) [2, 6]. In Semarang, the incidence of chronic tonsillitis at the Central General Hospital (RSUP) dr. Aritomoyo reported in Kariadi in 1978 that as many as 23.36% and 47% were aged 6-15 years [2, 8]. In Medan, according to Nurjannah in 2011, the distribution of the proportion of chronic tonsillitis sufferers in Medan in 2007 – 2010 based on age occurred mainly in the 11 – 20 year age group, namely 40% [9]. In Padang, according to Shalihat in 2013 from the medical record data of Dr. M. Djamil Padang found 149 patients with chronic tonsillitis with the highest frequency distribution of chronic tonsillitis patients by age in the age group 11-20 years 70 patients (47.0%) [10].

The provinces in Indonesia with the highest ARI diseases include East Nusa Tenggara (41.7%), Papua (31.1%), Aceh (30.0%), West Nusa Tenggara (28.3%), and East Java (28.3%). Riskesdas, in 2007 and 2013, found that the incidence of ARI in Indonesia was not much different, namely 25.5% and 25.0% [9]. The most chronic tonsillitis patients in children were in the 10-14 year group, as much as 50%, female sex was 56%, and the main complaint of repeated swallowing pain was 56% T3-T3 tonsil size was 68% [10]. Based on the above background, namely the absence of tonsillitis profile data in the UKI Hospital and the limited data on pediatric patients suffering from chronic tonsillitis that can still be accessed, namely only available data from 2015 until the year when the researchers took the data, the researchers were interested in conducting research. Therefore, the problem in this study was formulated as a question, namely, "What are the characteristics of Chronic Tonsillitis Patients in Children in the Ear Nose Throat - Head and Neck Hospital of the Indonesian Christian University in 2019?". The aim of the study, namely to determine the characteristics of Chronic Tonsillitis Patients in Children in the Ear Nose Throat - Head and Neck Hospital of the Indonesian Christian University in 2019.

Literature Review

The palatine tonsils are lymphoid tissue in the tonsillar fossa at both angles of the oropharynx and part of the Waldeyer ring. The palatine tonsils are denser than other lymphoid tissues. A thin capsule covers its lateral surface, and on the medial surface are crypts. The palatine tonsils are lymphoepithelial tissue that plays an essential role in the body's defense system, especially against foreign proteins that enter the food channel or the respiratory tract. Defense mechanisms can be specific or non-specific. When pathogens penetrate the epithelial layer, mononuclear phagocytic cells first recognize and eliminate antigens. The oval-shaped tonsils of lymph gland tissue have two main functions: capturing (trapping bacteria and viruses that enter the body through the mouth and sinuses) and collecting materials [13]. The foreign body effectively and as an organ of antibody production and sensitization of T-lymphocytes to specific antigens. The location of the tonsils is very likely to be exposed to foreign objects and pathogens, which then carry them to the lymphoid cells. If the tonsils cannot protect the body, inflammation and infection will occur, namely tonsillitis (tonsilloliths). The greatest immunological activity of the tonsils is found at 3–10 years of age.

The inflammation of the palatine tonsils (part of the Waldeyer ring) is caused by microorganisms such as viruses, bacteria, and fungi that enter by aerogenes and are foodborne. Acute tonsillitis occurs when inflammation lasts less than three weeks. Meanwhile, chronic tonsillitis occurs if the rash lasts more than three months or if the inflammation persists [14]. The occurrence of tonsillitis begins when germs enter the tonsils through the crypts until there erogenously (through the nose, droplets containing germs are inhaled by the nose, and then the nasopharynx continues to the tonsils), or foodborne, namely through the mouth with food. The tonsils function as a defense against germs entry into the body, either through the nose or mouth. Macrophages and polymorphonuclear cells destroy germs that enter there. If the tonsils repeat all the germs, the result is that germs are lodged in the tonsils. In this situation, the body's defense function of the tonsils turns into a nest of infection (tonsils as a focal infection). From time to time, the germs will not spread throughout the body, for example, in a decreased general condition.

The anterior pillar of the oropharynx opens into the oral cavity, and the soft palate consists of muscle supported by fibrous tissue and covered with mucosa. A cone-like shape is located in the central part of what we know as the uvula [15]. The lateral palate border on each side is divided into the anterior and posterior pillars of the fascia. Between the two posts is a gap where the fascia tonsils sit. The fascial tonsils on each side of the oropharynx are walnut-shaped lymphoid tissue covered by a fibrous capsule. The inner surface is covered by a highly adherent stratified squamous epithelial membrane. This epithelium extends into the crypts that open onto the surface of the tonsils. The triangular folds are thin mucosal folds that extend backward from the anterior pillars and cover part of the anterior surface of the tonsils that arise in embryonic life. The folds of the semilunar (supra tonsils) are the upper folds of the mucosa that unite the two pillars at their junction. The supratonsillar fossa is a cleft that varies in size, and it can also be located above the tonsils and between the anterior and posterior pillars [16]. The lingual tonsil is a collection of round protrusions containing lymphoid tissue in a stemless shape, located at the base of the tongue between the two faucial tonsils and extending anteroposteriorly from the circumvallate papillae to the epiglottis, separated from the tongue muscles by a layer of fibrous tissue. The Waldeyer ring of lymphoid has the essential parts, the tonsils and adenoids, which surround the pharynx. Other elements are the lingual tonsils, lateral pharyngeal bands, and lymphoid glands scattered in the Rosenmuller fossa under the mucosa of the posterior pharyngeal wall and near the orifice of the eustachian tube. Tonsil capsules have trabeculae (blood vessels, nerves, and efferent lymph vessels) that run into the parenchyma. The tonsils consist of 8–20 crypts, usually tubular, extending from the tonsil inside to the capsule on its outer surface [17]. The crypts are unbranched and are simple conduits. Sub-epithelial connective tissue clearly below the epithelial surface is immediately lost when the epithelium forms crypts. It causes the epithelial cells to adhere to the lymphatic structures of the tonsils. The crypt epithelium does not constitute a solid and intact protective barrier. The lymph nodes of the tonsils receive afferent vessels from the lower part of the occipital area. These lymph nodes are divided by efferents that travel to the top of the substernal mastoid gland. Mastoid glands or retro auricular glands (usually in pairs) are located near the insertion of m. sternocleidomastoid receives afferent vessels from the temporal part of the head, the inner surface of the ear, and the posterior part of the ear canal. The lymphatic vessels of this tonsillar tissue do not have afferent vessels. Lymph from the tonsillar parenchyma is accommodated at afferent terminals in the trabeculae [18]. From here, it penetrates the capsule to the superior

constrictor muscle on the back wall of the pharynx. Several branches run backward through the buccopharyngeal fascia, and the glands in the neck area empty into the deep neck lymph nodes under the sternocleidomastoid muscle. One of these lymph nodes is located next to the mandible, also called the tonsillar lymph node, because it is often enlarged during infection or tonsil malignancy. The trigeminal and glossopharyngeal nerves innervate the tonsils. The trigeminal nerve supplies the upper part of the tonsil through its branch, which passes through the sphenopalatine ganglion, the palatine nerve. The glossopharyngeal nerve can also innervate the tongue back and the pharyngeal wall [9, 10].

Viral infections (Rhinovirus, Influenza A, Adenovirus, Herpes Simplex virus, Epstein Barr virus (EBV), Metapneumovirus, Respiratory Syncytial Virus (RSV), and Parainfluenza) are the primary etiology of tonsillitis. Bacteria (Group A beta-hemolytic Streptococcus pyrogens (GABHS)) cause 15-30% of tonsillitis [19]. These bacteria attach to the adhesin receptors located on the tonsil epithelium. Other causes of tonsillitis include the fungus Candida sp. And spirochaeta (Vincent's angina) such as treponema pallidum, spirochaeta denticolata and treponema vincentii. Inadequate treatment of acute tonsillitis whose use is not rational. According to the National Antibiotic Use Manual (1992), the sensible use of antibiotics here is the suitable indication, the right patient, the right drug, the proper dose regimen, and awareness of the drug's side effects. Group A hemolytic streptococci can be estimated using the Centor score criteria (modified) / modified centor score criteria (a diagnostic tool in the form of a clinical scoring system to predict group A hemolytic Streptococci). Each criterion, when the meeting is given a score of one, and if the score is 0-1, the patient does not have pharyngitis due to group A -hemolytic Streptococcus infection. If the score is 1−3, then the patient has a 40% chance of being infected with group A -hemolytic Streptococcus, and if the score is four, the patient has a 50% chance of being infected with group A -hemolytic Streptococcus [20, 21].

School-age ranges from 6-12 years old begin to have an environment other than family. The immunological function of the tonsils is very active between the ages of 3-10 years. The effect of climate/weather, especially streptococcal infection, occurs throughout the year in winter in subtropical countries (having four seasons) compared to tropical countries (having two seasons). People living in the highlands generally consume spicy food, hot drinks, and smoking, which are risk factors that cause throat health problems. The environment is a collection of all external conditions that can affect the life and development of human living organisms. Polluted air (polluted air) can play a role in the incidence of ARI [22]. The increasing level of particulate pollution can worsen human health through inflammation of the respiratory tissue.

Local symptoms vary from sore throat, sore throat, and difficulty swallowing to painful swallowing. Systemic symptoms are feeling unwell (malaise), headache, subfebrile fever, and muscle and joint pain. Clinical signs include tonsils with debris in their crypts (chronic follicular tonsillitis), tonsillar edema or hypertrophy (parenchymatous tonsillitis), fibrotic tonsils (chronic fibrotic tonsillitis), hyperemic anterior tonsillar folds and swollen regional lymph nodes [23]. A physical examination will reveal hypertrophied or atrophic tonsils, hyperemia, and unclear edema. Detritus is seen, or detritus is seen when the tonsils are pressed with a tongue blade. Neck glands can be enlarged without tenderness.

Management is given based on the cause of tonsillitis that occurs. If the cause is bacteria, antibiotics are given orally for ten days. If the child has difficulty swallowing, antibiotics are given as an injection. The antibiotic given was penicillin 500 mg 3 times a day. Other options are erythromycin 500 mg 3 times a day or amoxicillin 500 mg 3 times a day given for five days. Dosage in children: erythromycin 40 mg/kg BW/day, amoxicillin 30-50 mg/kg BW/day [24]. There is no need to start antibiotics immediately; a delay of 1-3 days does not increase complications or delay the healing of the disease. Antibiotics will only slightly shorten the duration of symptoms and reduce the risk of rheumatic fever. If the body temperature is high, the patient should be on bed rest and be recommended to drink lots of water. Soft foods are given as long as the patient still has difficulty swallowing. Analgesics (paracetamol and ibuprofen are the safest) are more effective than antibiotics in relieving symptoms. Pharyngeal pain can even be treated with lidocaine spray. If diphtheria tonsillitis is suspected, the patient should be immediately given anti-diphtheria serum (ADS), but if there are symptoms of respiratory obstruction, immediately refer to the hospital [20].

Research Method

This study uses a descriptive research design by taking secondary data from the medical records of patients with chronic tonsillitis in children in the ENT-KL section of UKI Hospital Jakarta in 2019. The study was conducted in the ENT-KL section of UKI Hospital Jakarta; medical record data was taken in 2019. The study population is all children who suffer from chronic tonsillitis and sought treatment at the UKI Hospital in the ENT-KL section from 2015-2019 and have complete medical record data, totaling 59 children. The number of samples used total sampling and obtained 59 pediatric patients who suffered from chronic tonsillitis and went to the UKI Hospital for the ENT-KL section from 2015-2019. Data were taken from medical records in 2015-2019 of patients diagnosed with chronic tonsillitis at UKI Hospital Jakarta during the 2019 study. The results of the examination were recorded in the data collection sheet. The data that has been collected is then checked for completeness before being processed further statistically using the Statistics Product and Service Solution (SPSS) program. The processed results were statistically analyzed and presented descriptively in the form of tables and narratives. This research follows the rules following applicable research ethics.

Result and Discussion

The study population was all children who suffered from chronic tonsillitis and went to the UKI Hospital for the ENT-KL section from 2015-2019 and had complete medical record data, totaling 59 children. The sample was 59 pediatric patients who suffered from chronic tonsillitis and went to the UKI Hospital for the ENT-KL section from 2015-2019.

Table 1: Distribution of Characteristics of Chronic Tonsillitis Patients in Children by Age

Age	Frequency	%
3 – 9 years	27	45.8
10 – 14 years	22	37.3
15 – 17 years	10	16.9
Total	59	100

The highest distribution of patients with chronic tonsillitis was in the age group 3-9 years with 27 (45.8%) patients, followed by the age group 10-14 years with as many as 22 (37.3%) patients and 15-17 years as many as 10 (16.9%)) sufferers.

Table 2: Distribution of Characteristics of Chronic Tonsillitis Patients in Children by Gender

Gender	Frequency	%
Male	32	54,2
Female	27	45,8
Total	59	100

Gender distribution in children suffering from Chronic Tonsillitis was 32 patients (54.2%) male and 27 female (45.8%).

Table 3: Distribution of Characteristics of Chronic Tonsillitis Patients in Children by Main Complaints

Main complaint	Frequency	%
Swollen Neck	4	6.8
A lump in the throat	20	33.9
Swallowing Pain (Repeated)	30	50.8
Out of breath	5	8.5
Total	59	100

The distribution of the main complaints in patients with Chronic Tonsillitis in children is painful swallowing (repeated) in as many as 30 patients (50.8%), followed by a lump in the throat in 20 patients (33.9%), shortness of breath in 5 patients (8.5%) and neck swelling in 4 patients (6.8%).

Table 4: Distribution of Characteristics of Chronic Tonsillitis Patients in Children by Tonsil Size

Tonsil Size	Frequency	%
T1-T1	4	6.8
T1-T2	1	1.7
T2-T2	17	28.8
T2-T3	2	3.4
T3-T1	1	1.7
T3-T3	28	47.5
T4-T4	5	8.5
T(2-3)-T(2-3)	1	1.7
Total	59	100

The most common distribution of tonsil size was T3/T3 in 28 (47.5%) patients, followed by T2/T2 in 17 (28.8%) patients, T4/T4 in 5 (8.5%) patients., T1/T1 as many as 4 (6.8%) patients, while (T1/T2, T3/T1, T2-3/T2-3) each found only one patient (1.7%). This study uses total sampling from medical record data, namely all pediatric patients seeking treatment at the UKI Hospital ENT polyclinic. There are data on patients with Chronic Tonsillitis in patients under 18 years (children) in 2019, as many as 59 patients.

The highest patients distribution with Chronic Tonsillitis was in the age group 3-9 years, as many as 46% of patients, followed by the age group 10-14 years, as much as 37%, and the age group 15-17 years as many as 17% patients. The results of this study are almost in agreement with the Case Series research conducted by Ivan (2013), namely, from 50 samples, the distribution of chronic tonsillitis patients in children was mostly in the 10-14 year age group, as much as 50%. While in the author's research, the distribution for the age group 10-14 years is the most number 2. The study by Sapitri (2012) almost follows the sample of 30 obtained as many as 15 (50%) patients aged 5-14. The immune system in children is still learning to recognize and protect the body from germs that enter.

Meanwhile, in adolescents and adults, the body's immune system immediately recognizes the type of germ and directly attacks it as soon as the embryo enters the body.27 Many factors cause chronic tonsillitis to occur more frequently in childhood. The most excellent immunological activity of the tonsils is found at the age of 3–10 years. The picture of the cellular immune response in chronic tonsillitis shows an increase in antigen deposits in the tonsil tissue, causing a continuous upregulation of immunocompetent cells. It is evidenced by the increased incidence of cells expressing IL-1β, TNF-, IL-6, IL-8, IL-2, INF-γ, IL-10, and IL-4. At school age, starting from the age of 5 years, children are more susceptible to viral and bacterial infections from the surrounding environment. One of the predisposing factors for chronic tonsillitis is the influence of several types of food; this is because children tend to consume artificial sweeteners, contain lots of preservatives, and poor oral care [1, 25].

It was found that the distribution of patients with Chronic Tonsillitis was more commonly found in the male sex (54%) while the female (46%). In a cross-sectional study by Pereira (2008), among 102 patients with Chronic Tonsillitis, both males and females had the same number of 51 (50%) patients. From 9,479 twins born from January 1, 1967, to December 31, 1979, there was no evidence of genetic involvement of distinct sexes in suffering from Chronic Tonsillitis [26]. There are differences in several studies regarding the dominant sex experiencing chronic tonsillitis. Several theories were put forward regarding sex differences in the incidence of chronic tonsillitis [27]. Some of the factors he studied involved genetic factors and cultural differences. However, it turns out that there is no involvement of genetic factors and cultural differences in differences in sex dominance who experience chronic tonsillitis. There have not been found any factors influencing gender differences in chronic tonsillitis. It is probably just a population influence within a population regarding sex dominance. So that if there are more boys in a population, the possibility will be more significant for male dominance to occur with chronic tonsillitis.

The most common distribution of main complaints in patients with Chronic Tonsillitis is pain in swallowing (recurring) in as many as (51%) of patients, followed by a lump in the throat (34%) patients, shortness of breath in (8%) patients, and swollen neck (7%). From 63 patients with Chronic Tonsillitis, 41.3% complained of painful swallowing as the main complaint. Painful swallowing occurs due to inflammation of the tonsils, causing complaints of pain when swallowing when something swallowed touches the inflamed area. Repeated events are due to poor healing due to the initial attack on the tonsils, so that pathogenic bacteria that remain in the tonsils during the first attack can at any time attack the tonsils again if the immune system decreases. Repeated episodes of pathogenic bacteria cause complaints in the form of repeated swallowing pain, a sign of chronic inflammation.

The most common distribution of tonsil size was T3/T3 in 28 (47.5%) patients, followed by T2/T2 in 17 (28.8%) patients, T4/T4 in 5 (8.5%) patients., T1/T1 as many as 4 (6.8%) patients, while (T1/T2, T3/T1, T2-3/T2-3) each found only one patient (1.7%). The above results are consistent with a cross-sectional study by Akil, Savitri, and Lokey of 812 patients, which found 341 (42%) with tonsil size T3, 308 (38%) with size T4, 130 (16%) size T2, and 33 (4%) T1 size [28]. The T3 dominant tonsil size equation occurred because the size of the tonsil swelling against the oropharynx (from medial to lateral) measured between the right and left anterior pillars showed the same enlargement, namely >50%<75%. Similarly, in the case-control study found that of 100 samples, 42% was T3 tonsil size, 38% was T4 tonsil size, 14% was T2 tonsil size, and 6% of patients had T1 tonsil size [29].

The studies above have similarities in the size of the dominant tonsils found in children. Factual data have not been found on why there are similarities in the size of the enlarged tonsils. One of the factors of enlargement of the tonsils is parenchymal hyperplasia or fibrinoid degeneration with obstruction of the tonsil crypts. Repeated infections and blockage of the tonsillar tombs result in an increase in the stasis of debris and antigens in the tombs, as well as a decrease in the integrity of the crypt epithelium, making it easier for bacteria to enter the tonsil parenchyma [16, 17].

Every child who has chronic tonsillitis will experience a decrease in the integrity of the crypt epithelium, accumulation of stasis debris, blockage of crypts, parenchymal hyperplasia/fibrinoid degeneration with obstruction of the tonsil crypts [30], so it is possible for swelling to occur with relatively the same size, namely the ratio of the tonsils to the oropharynx (from medial to lateral).) measured between the right and left anterior pillars showed enlargement >50%<75%.

Conclusion

The conclusion of this study is the characteristics of chronic tonsillitis patients in children based on medical record data obtained the most description in the age group 3-9 years as much as 45.8%, male sex as much as 54.2%, the main complaint of repeated swallowing pain as much as 50.8%, size tonsils T3-T3 as much as 47.5%. Thus, it is hoped that future researchers need prospective research to determine the number of samples using the formula. Then, it is hoped that future researchers need prospective research to study/prove the effect of chronic tonsillitis on decreasing quality of life. It is also hoped that future researchers need prospective research to consider variables and pay attention to other confounding factors that have not been studied in this study, such as climate/weather factors, environment, and oral hygiene.

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