Journal of Cardiovascular Disease Research

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE01, 2023

Epidemiology of pharyngitis and tonsillitis in children

Rasha Kamil Hamad[1] and Ahmed khanjar abd[2]
Al-Husain Teaching Hospital, Samawah, Al-Muthanna, Iraq.
MBCHB, DOP[1]
Al-Hussein Military Hospital, Iraqi Ministry of Defense[2]

Abstract:

This study was aimed to investigate the epidemiology of pharyngitis and tonsillitis in children. Between November 2020 and October 2022, 238 children aged 1-8 years (109 females and 129 males) with tonsillitis, pharyngitis, or tonsillopharyngitis were included in cross-sectional research at pediatric and ENT clinics. A kid between the ages of 2 and 6 who has symptoms of fever, anterior tonsillar exudates, or anterior cervical adenitis and is seen by an ENT or pediatric specialist is eligible for inclusion. Those who had previously taken antibiotics for the present sickness were eligible to participate. Swabs were taken from patients and cultivated on Blood agar in an anaerobic incubator at 37 degrees Celsius for 24 to 48 hours. Gram stain was used to examine the colonies for identification and morphology. The slide test was used for biochemical testing, such as the catalase test, to identify microorganisms. The results showed that tonsilitis was significantly ($P \leq 0.05$) higher than another type. it seems that the 2–4-year-old age bracket is the worst hit (39.5%) while the 3.5–7-year-old bracket is the least hit (24.1%), with a peak incidence in the 1–5-years age group for female (44%). A painful throat was more common among male than females, with a gender gap of 54.2%. the incidence of sore throat in children increasing significantly ($P \leq 0.05$) during the winter and Autumn, it decreased at summer and spring.

Inconclusion, Tonsilitis was occurred in higher percentages, the tonsillo-pharyngitis occur in male at age 5-7 years, mainly at winter and Autumn seasons.

Keywords: tonsilitis, pharyngitis, children, epidemiology.

Introduction:

pharyngitis is a common presentation to general practitioners [1]. Most cases of sore throat are caused by viruses; however, 25–30% of these infections are caused by the Group A Streptococcal (GAS) bacteria [2]. While sore throat is a minor illness, 0.3–3% of patients with GAS pharyngitis may develop serious complications, [2] such as acute rheumatic fever (ARF) and its sequela, rheumatic heart disease (RHD) [3]. ARF and RHD are a significant cause of morbidity and mortality in developing countries and amongst Indigenous populations living in developed countries [4].

Rheumatic heart disease (RHD) is a potential complication of untreated group A β-haemolytic streptococcal (GAS) pharyngitis that is endemic in many low- and middle-income countries and in some indigenous populations of high-income countries [5-6]. RHD is a disease of poverty and, as a reflection of its enduring neglect, robust assessments of its prevalence were reported for the first time only several years ago. The Global Burden of Disease Study (2015) estimated that more than 33 million people are living with RHD [7] and 320,000 people die of the disease each year [8].

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE01, 2023

population-based screening studies using portable echocardiography have consistently revealed rates of 1–3% in schoolchildren [5–8]. Rheumatic heart disease is the consequence of an aberrant immune response following GAS pharyngitis, whereby antibodies elicited to the bacterial pathogen cross react with proteins in the heart [5]. If not treated appropriately, GAS pharyngitis leads in a small percentage of patients to acute rheumatic fever (ARF). Rheumatic heart disease develops in nearly half of patients with ARF and is typically characterized by progressive damage to heart valves spurred by repeat exposures to GAS. Patients with RHD are at risk of debilitating heart failure, stroke, endocarditis, and premature death [7].

Tonsillitis is inflammation of the pharyngeal tonsils. The inflammation usually extends to the adenoid and the lingual tonsils; therefore, the term pharyngitis may also be used. Most cases of bacterial tonsillitis are caused by group A betahemolytic Streptococcus pyogenes (GABHS). In the first century AD, Celsus described tonsillectomy performed with sharp tools and followed by rinses with vinegar and other medicinals. Since that time, physicians have been documenting administration of tonsillitis. Tonsillitis gained further care as a medical concern in the late 19th century.

Tonsillitis most frequently occurs in children; nevertheless, the condition infrequently occurs in children younger than 2 years. Tonsillitis caused by Streptococcus species normally occurs in children aged 5-15 years, although viral tonsillitis is more common in younger children. Peritonsillar abscess (PTA) usually happens in teens or young adults but might present earlier. Pharyngitis accompanies many upper respiratory tract infections. Amid 2.5% and 10.9% of children might be defined as carriers. In one study, the mean prevalence of carrier status of schoolchildren for group A Streptococcus, a cause of tonsillitis, was 15.9% [9,10]. Consistent with Herzon et al, children account for almost one third of peritonsillar abscess episodes [6]. Klug found seasonal and/or age-based variations in the occurrence and cause of PTA. Among his conclusions, he stated that the occurrence of PTA increased throughout childhood, peaking in teenagers and then progressively falling until old age.(11).

This study was aimed to investigate the epidemiology of pharyngitis and tonsillitis in children.

Materials and Methods:

Between November 2020 and October 2022, 238 children aged 1-8 years (109 females and 129 males) with tonsillitis, pharyngitis, or tonsillopharyngitis were included in cross-sectional research at pediatric and ENT clinics. A kid between the ages of 2 and 7 who has symptoms of fever, anterior tonsillar exudates, or anterior cervical adenitis and is seen by an ENT or pediatric specialist is eligible for inclusion. Those who had previously taken antibiotics for the present sickness were eligible to participate.

Swabs were taken from patients and cultivated on Blood agar in an anaerobic incubator at 37 degrees Celsius for 24 to 48 hours. Gram stain was used to examine

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE01, 2023

the colonies for identification and morphology. The slide test was used for biochemical testing, such as the catalase test, to identify microorganisms.
Statistical analysis was done by using SPSS version 23.

Results:

Table 1 displays the percentage of patients with tonsillitis, pharyngitis, or both. The results showed that tonsilitis was significantly (P≤0.05) higher than another type.

Table 1. Type, number and percentages of infection.

Type of infection	**No. of infection**	**Percentage**
Tonsillitis	93	39.1**
Pharyngitis	61	25.6
Tonsillo-pharyngitis	84	35.3*
Total	238	100%

Based on the data in Table 2, it seems that the 2-4-year-old age bracket is the worst hit (39.5%) while the 3.5–7-year-old bracket is the least hit (24.1%), with a peak incidence in the 1–5-years age group for female (44%). A painful throat was more common among male than females, with a gender gap of 54.2%.

Table 2. Frequency of infection between age and sex

Sex	Age 1-5 years	Age 6-8 years	Age 3.5-7 years	Total
Male	47 (36.4%)	51(39.5%)	31(24.1%)	129 (54.2%)*
Female	48 (44%)	45 (41.3%)	16 (14.7%)	109 (45.8%)
Total	95 (39.9%)	96 (40.3%)	47 (19.8%)	238

According to Table 3, the incidence of sore throat in children increasing significantly (P≤0.05) during the winter and Autumn, it decreased at summer and spring.

Table 3. prevalence according to season of the year

Season	Number of infections	Percentages
Winter	74	31.1%*
Spring	33	13.9%
Summer	39	16.4%
Autumn	92	38.6%*
Total	238	100%

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE01, 2023

Discussions:

The most typical condition leading to doctor appointments is still a Tonsillo-pharyngitis. Tonsillitis is an inflammation or illness that affects the tonsils. Under normal conditions, the tonsils filter viruses and bacteria that enter the body via the mouth and nose before they can cause disease. White blood cells of the immune system eliminate viruses or bacteria in the tonsils by creating cytokines that cause inflammation, such as phospholipase A2, which also cause fever (12).

The age range of 6 to 10 years had the greatest incidence rate. High exposure to the outside world and a lack of awareness may be to blame for this. The prevalence of pharyngitis in children aged 5 to 15 years in England is greatest, according to many earlier research, by 37%. (13,14,15). Evidence shows that the high rate of illness in this age group may be related to children's increased activity, which increases the risk of infection exposure (16). Additionally, school-age children may be interacting in classes, increasing the risk of illnesses. In the present research, males had a pharyngitis incidence rate of 53.6% compared to girls' 46.4%. According to research by (17) conducted in Sabha, Libya, men were infected with pharyngitis at a rate of 64.3% while females were infected at a rate of 35.7%. In contrast, research in Syria found that the prevalence of pharyngitis was 53.6% among women and 47.4% among men (18).

Present study showed that the infection is higher in winter and Autumn, these was agreed with results of (19) conducted a research in Benghazi that was comparable to this one and found that the highest seasons for infection were winter and fall. In contrast, Saleh (16) earlier research in Taiz, Yemen, indicated that the winter and rainy seasons were the times of maximum incidence (July and August). According to research by Nandi et al. (20), the winter (November to January) and rainy (August) seasons were when the relative frequency was highest in north India.

Conclusion:

Tonsilitis was occurred in higher percentages, the tonsillo-pharyngitis occur in male at age 6-10 years, mainly at winter and Autumn seasons.

References:

1- Marijon E, Mirabel M, Celermajer DS, Jouven X. Rheumatic heart disease. Lancet. 2012;379:953–64.

2. Beaton A, Sable C. Health policy: reducing rheumatic heart disease in Africa – time for action. Nat Rev Cardiol. 2016;13:190–1.

3. GBD 2015 Disease and injury incidence and prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: a systematic analysis for the global burden of disease study 2015. Lancet. 2016;388:1545–602.

4. GBD 2015 Mortality and causes of death Collaborators. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the global burden of disease study 2015. Lancet. 2016;3e88:1459–544.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE01, 2023

5- Bryant AE, Stevens DL. Streptococcus pyogenes. In: Bennett J, Dolin R, Blaser M, editors. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases, Updated Edition2015. p. 2285– 99.
6. Carapetis J, Bowen A, May P. The inequitable burden of group A streptococcal diseases in Indigenous Australians: we need to fill evidence gaps and make clinical advances to reduce these diseases of disadvantage (Report). MJA. 2016; 205(5).
7. Oliver JR, Pierse N, Stefanogiannis N, Jackson C, Baker MG. Acute rheumatic fever and exposure to poor housing conditions in New Zealand: A descriptive study. Journal of Paediatrics and Child Health. 2017; 53(4):358–64. https://doi.org/10.1111/jpc.13421 PMID: 28052445
8. Carapetis JR, Steer AC, Mulholland EK, Weber M. The global burden of group A streptococcal diseases. Lancet Infect Dis. 2005; 5:685–94. https://doi.org/10.1016/S1473-3099(05)70267-X PMID: 16253886.
9. Morens DM (1999): Death of a president. N Engl J Med.,341(24):1845-9.
10. Stelter K(2014): Tonsillitis and sore throat in children. GMS Curr Top Otorhinolaryngol Head Neck Surg.,13:Doc07.
11. Bhattacharyya N and Kepnes LJ (2002): Economic benefit of tonsillectomy in adults with chronic tonsillitis. Ann Otol Rhinol Laryngol.,111:983–988.
12. Masters, K. G. &Zezoff, D. (2020). Anatomy, head and neck, tonsils. Journal of Otolaryngology: Head and Neck Surgery, 35(20), 1-11.
13. Bisno AL (1996). Group A streptococcal infection. Pediatrics 6:949-954.
14. Pichichero ME (1997). Sore throat after sore throat after sore throat. Are you asking the critical questions? Postgraduate Medical Journal 101(1):205-212.

15. Pickering LK, Peter G, Baker CJ (2000). Group A streptococcal infections. In: Pickering LK, editor. Red Book: Report of the committee on Infectious Diseases. 25th ed. Elk Grove, Il: Academy of Pediatrics pp. 526-532.
16. Saleh MM (2009). Streptococcal throat infection among Yemeni children. Iraqi Journal of Science 50(1):126-135.
17. Soliman M (2012). Prevalence of Streptococcus Pyogenes in Children with Pharyngitis in Sabha City. Master science, thesis. The Libyan Academy-Benghazi-Libya.
18. Cherith A, Marweshia F, Moussa R (2005). Epidemiology of pharyngitis and tonsilitis in childern and clinical laboratory connection of proving bacterial diagnosis .Tishreen university journal for studies and scientific research 27(3):183-192.
19. Alhouni M (2005). Upper respiratory tract infection associated with streptococcus pigeon in Benghazi area M.S.C. Thesis. Faculty of science, Benghazi university-Libya.
20. Nandi S, Kumar R, Ray P, Vohra H, Ganguly NK (2001). Group A streptococcal sore throat in a periurban population of northern India: a one-year prospective study. Bulletin of the World Health Organization 79:528-533.