

VIRAL AND BACTERIAL PHARYNGOTONSILITIS: DIFFERENTIAL CLINICAL ASPECTS

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Abstract: Introduction: Acute pharyngotonsillitis (FT) is defined as an infection of the pharynx and/or tonsils that can be caused by a range of pathogens. When the infection is viral, there is no specific treatment. Because it is a self-limiting disease in 5 to 7 days and has a good prognosis in previously healthy children, general measures are more indicated in these cases: hydration, symptoms for pain and/or fever, preventive measures and observation. However, although most bacterial infections are also benign and self-limiting, a small number of patients infected with some strains of hemolytic beta group A Streptococcus can complicate matters. Given this risk, early treatment with antibiotics is well indicated. Despite this, the abusive use of antibiotics has globally worried health authorities. Therefore, the current study aims to demystify differential clinical aspects of the manifestation of TF in order to improve medical accuracy in choosing the most appropriate treatment. **Methodology:** This is a literature review initiated from the selection of the main etiological agents for pharyngotonsillitis based on the incidence in scientific literature of its different types (viral or bacterial). Among the inclusion criteria, studies with description of clinical history and/or physical examination for the disease were selected. Finally, a literature review of the main data related to. **Results:** The age group does not exclude the possibility, but it confirms it as a favorable factor for differentiation. In children under 3 years of age, the incidence of viral infections is much higher than that of bacterial origin. Children with viral infections also manifest more extra-pharyngeal symptoms, such as nasal discharge, conjunctivitis, cough, hoarseness, diarrhea, ulcerations, or others. In addition, high fever, sudden onset, intense odynophagia, petechiae on the palate, and cervical adenopathy that is painful on palpation are more frequently

associated with bacterial infection. Currently, one of the most used clinical tools to indicate the possibility of the etiologic agent and, consequently, the need for treatment with antibiotic therapy, is the McIsaac Modified Centor Score. **Conclusions:** The difference in management makes a thorough clinical diagnosis important, despite the recommendation to use complementary exams, to avoid the irrational use of antibiotics - which already represents a situation of global alert. Finally, literature review studies such as this one allow to support medical practice with more illustrative and objective information, whose expected result involves the improvement of the clinical diagnosis and, finally, the more accurate and rational prescription of antibiotics in cases of TF.

Keywords: Viral pharyngotonsillitis, Bacterial pharyngotonsillitis, Clinical condition, Diagnosis, Differential diagnosis.

INTRODUCTION

Acute pharyngotonsillitis (FT) is defined as an infection of the pharynx and/or tonsils that can be caused by a range of pathogens. Its transmission occurs from person to person, since the main colonization foci include the nasopharynx and oropharynx. Thus, secretions can be aerolyzed from the upper respiratory tract and serve as a major source of spread of pathogens.

Among these, viruses represent the most common cause, especially adenovirus, influenza, parainfluenza, rhinovirus, respiratory syncytial virus, coxsackie, echo, herpes simplex, among others. When the infection is viral, there is no specific treatment (except for special cases of flu caused by the influenza virus). Because it is a self-limiting disease in 5 to 7 days and has a good prognosis in previously healthy children, general measures are more indicated in these cases: hydration, symptoms for pain and/or

fever, preventive measures and observation.

On the other hand, bacterial TF are also common infections in the general population. The bacterium most involved in the development of this disease is the group A beta hemolytic *Streptococcus* (SGABH), which corresponds to 15% to 30% of childhood tonsillitis and 5% to 15% of adults (BORCHARDT, 2013). Other bacteria involved, less commonly, are: *Haemophilus influenzae*, *Moxarella* catarrhalise and *Staphylococcus aureus*, whose frequency varies according to age, region and season. There is consensus that the diagnosis of streptococcal pharyngotonsillitis must be suspected through clinical and epidemiological data and confirmed by cultural examination or the rapid streptococcal antigen detection test (Treatise of Pediatrics, 2022).

Although most bacterial infections are also benign and self-limiting, a small number of patients infected with some strains of SGABH can complicate with rheumatic fever, necrotizing fasciitis, peritonsillar abscess, cervical adenitis, supraglottitis, cellulitis, pneumonia, glomerulonephritis, among others. Faced with this risk, early treatment with antibiotics (penicillins, cephalosporins or macrolides) is well indicated, since SGABH are highly sensitive to these classes, saving specific conditions of the antimicrobial profile of some community, and thus promoting a block in transmission. of more aggressive strains.

Despite this, however, the abusive use of antibiotics has globally worried health authorities. It is alleged that this drug class represents the most erroneously prescribed drugs. That is, in addition to burdening the health system, the bad indication also contributes to the worsening of the selection of superbacteria - organisms increasingly resistant to current antimicrobial therapeutic proposals (ABRANTES et al, 2008). However,

antibiotics also cause several adverse effects that can categorize their misuse as iatrogenic, such as itching, nausea, vomiting, dysregulation of the intestinal flora with diarrhea, interaction with contraceptives, among others.

Therefore, considering that pharyngotonsillitis is a disease of expressive prevalence whose diagnosis is, in clinical practice, usually separated from complementary exams, the current study aims to demystify differential clinical aspects of its manifestation in order to improve medical accuracy in choosing the most appropriate treatment.

METHODOLOGY

This is a literature review initiated from the selection of the main etiological agents for pharyngotonsillitis based on the incidence in scientific literature of its different types (viral or bacterial). Then, keywords were defined in the DeCs BVS in “Viral pharyngotonsillitis”, “Bacterial pharyngotonsillitis”, “Clinical picture”, “Diagnosis” and “Differential diagnosis”. With these descriptors, articles and textbooks on the topic were searched via Google Scholar, Scielo and PubMed.

Among the inclusion criteria, studies with description of clinical history and/or physical examination for the disease were selected. Materials with repetitive or controversial information were excluded from the survey. There was no discrimination of time interval or origin of publication, since it is a qualitative study. Finally, a literature review of the main data related to clinical presentation and diagnosis was performed.

RESULTS

Symptoms of infectious tonsillitis include sudden-onset sore throat, dysphagia, and fever. In children, headache, nausea, vomiting and abdominal pain may occur.

On physical examination, erythematous tonsillopharyngeal mucosa with or without the presence of exudate (figure 1) and lymphadenitis with sensitive and enlarged anterior cervical lymph nodes are noticeable. Other findings include: erythematous uvula, petechiae on the hard palate, scarlatiniform rash (BORCHARDT, 2013). These findings, however, are not specific enough to determine the etiology.



Figure 1. Tonsils with purulent membranes.

Source: James Heilman, 2010.

VIRAL PHARYNGOTONSILLITIS

The age group does not exclude the possibility, but it confirms it as a favorable factor for differentiation. In children under 3 years of age, the incidence of viral infections is much higher than that of bacterial origin.

Children with viral infections also show more extra-pharyngeal symptoms, such as nasal discharge, conjunctivitis, cough, hoarseness, diarrhea, ulcerations, or others.

Pharyngoconjunctival fever is a typical presentation of adenovirus infection, which presents with prolonged exudative

pharyngotonsillitis associated with conjunctivitis. In infections with the Epstein-Barr virus, there is the duality of generalized lymphadenopathy with splenomegaly that characterizes mononucleosis. As for cocksackie and herpes simplex, the manifestation of vesicular or ulcerative lesions are more likely.

BACTERIAL PHARYNGOTONSILLITIS

Accurate diagnosis of streptococcal TF by clinical symptoms alone is limited due to the overlap of clinical signs and symptoms with viral TF (LUO, 2019), however, in the occurrence of non-painful adenomegaly, conjunctivitis, cough, runny nose, stomatitis, conjunctivitis, diarrhea, hoarseness and oropharyngeal ulcerative lesions raises a strong suspicion that the origin is viral, sparingly ruling out the bacterial etiology (BORCHARDT, 2013).

In addition, high fever, sudden onset, intenseodynophagia, petechiae on the palate, and cervical adenopathy that is painful on palpation are more frequently associated with bacterial infection. This picture associated with the physical examination in figure 2 favors causal differentiation.

Currently, one of the most used clinical tools to indicate the possibility of the etiologic agent and, consequently, the need for treatment with antibiotic therapy, is the McIsaac Modified Centor Score. It assigns points to each clinical sign that it indicates to be caused by *Streptococcus* from group A. Treatment is recommended when there is a sum equal to or greater than 3 points.

Contrary to what is disseminated, exudative hyperemia does not make a precise differential diagnosis between the etiologies, since it may or may not be present in both situations. Viruses that often produce purulent tonsillar exudate include the virus:

Epstein-Barr, *Adenovirus* and *Herpesvirus*. Among the bacteria, the *Streptococcus-hemolytic* (SGABH), the pneumococcus, the *Mycoplasma pneumoniae*, the *Staphylococcus aureus* and the *Haemophilus influenzae*, but SGABH are the most common bacteria causing acute pharyngitis.

It is worth mentioning the format of viral and bacterial superinfection, where one agent acts as a facilitator of infection by another, such as a “gateway”. In addition, there are laboratory tests available in some services for the detection of the pathogen that causes pharyngotonsillitis, but this does not represent a reality accessible in most services, nor is it expressly necessary in the face of a good technique for clinical differentiation.

STREPTOCOCCAL OR EPSTEIN-BARR PHARYNGOTONSILLITIS?

The most important and common differential diagnosis for SGABH is infectious mononucleosis, caused by the Epstein-Barr virus. Mononucleosis is suspected in patients aged 10 to 30 years who report fatigue in addition to sore throat. In these patients, a purulent and white plaque on the amygdala (figure 3), called “bride’s veil” is observed, which appears late after days of high fever. Posterior cervical adenopathy and atypical lymphocytosis may also occur.

In general, the signs and symptoms are generally less severe than in cases of SGABH (KALRA, 2016). The classic clinical presentation of the disease consists of the triad composed of high fever, pharyngitis and lymphadenomegaly. A significant aspect in relation to fever is the preservation of the general condition even in patients with very high temperatures (up to 40.5°C) – something different from what is observed in the context of bacterial infections. Other findings include Hoagland’s sign (periorbital edema), present in some diagnosed cases.



Figure 2. Pharyngeal hyperemia and exudate, hypertrophied tonsils, absence of abscess.
Source: Medical-Academic League of Plastic Surgery of the Federal District, 2020.

Criteria Centor e Mclsaac			
Criterion	Variable		Score
Centor	Fever >38°C		+1
	absence of cough		+1
	anterior cervical adenopathy		+1
	Tonsillar exudate or swelling		+1
Mclsaac	Age	3 to 14 years	+1
		15 to 44 years	0
		≥45 years old	-1
Probability of group A Streptococcus pharyngitis: ≤0 ponto: 1-2,5%; 1point>:5-10%; 2 pontos:11-17%; 3 pontos :28-35%; ≥4 pontos: 51-53%			

Table 1. Centor and Mclsaac criteria.

Source: Medical-Academic League of Plastic Surgery of the Federal District, 2020.



Figure 3. Swollen pus-covered tonsils in a patient with infectious mononucleosis.
Source: DR P. MARAZZI/SCIENCE PHOTO LIBRARY.

Viral Origin	Bacterial origin
<ul style="list-style-type: none"> • Minor children (< 3 years), • More extrapharyngeal symptoms, • Most characteristic forms: pharyngoconjunctival fever, generalized lymphadenopathy with splenomegaly, vesicular or ulcerative manifestations. 	<ul style="list-style-type: none"> • Older children (3-14 years old), • High fever, abrupt onset, absence of cough, severe odynophagia, petechiae on the palate, and painful cervical adenopathy. • Major complications.

Table 2. Differential clinical aspects of viral and bacterial pharyngotonsillitis.

If complementary tests are available, it is important to know that the isolation of *Streptococcus pyogenes* does not rule out the possibility of infectious mononucleosis, since the concomitant infection – EBV/*S. pyogenes* – can occur in up to 30% of cases.

CONCLUSIONS

Pharyngotonsillitis is a common disease in the general population and can be caused by a series of etiological agents, of which viruses (most common) and bacteria stand out. As for the first, clinical management is more symptomatic, keeping observation to avoid worsening in specific cases, but aiming at a spontaneous resolution according to the natural history of the disease. As for the second, antimicrobial therapy becomes well used with the aim of, above all, blocking the circulation of strains more related to complications – such as rheumatic fever and post-streptococcal glomerulonephritis. This difference in management makes a thorough clinical diagnosis important, despite the recommendation to use complementary exams, to avoid the irrational use of antibiotics – which already represents a global alert situation.

The main ways to differentiate the etiology of pharyngotonsillitis are summarized in table 2.

It is also important to recognize the importantly similar picture between

infectious mononucleosis by Epstein-Barr and streptococcal pharyngitis, including the formation of exudative tonsillitis.

Finally, literature review studies such as this one allow to support medical practice with more illustrative and objective information, whose expected result involves the improvement of the clinical diagnosis and, finally, the more accurate and rational prescription of antibiotics in cases of pharyngotonsillitis.

REFERENCES

- BARBOSA, Anna Maria Andrade; DE OLIVEIRA CARDOSO, Carla. Amigdalite Estreptocócica: Protocolo de investigação e tratamento. **Brazilian Journal of Health Review**, v. 3, n. 5, p. 14951-14957, 2020.
- BEREZIN, Eitan N. et al. Faringite estreptocócica: diagnóstico clínico e laboratorial. **Rev. paul. pediatr**, p. 177-9, 1996.
- CARDOSO, Débora Morais; GILIO, Alfredo Elias. Streptococcus pyogenes do Grupo A e Faringotonsilite Aguda.
- DE OLIVEIRA, Juliana Linhares et al. O vírus Epstein-Barr e a mononucleose infecciosa. **Rev Bras Clin Med. São Paulo**, v. 10, n. 6, p. 535-43, 2012.
- LOPEZ, Fabio Ancona; CAMPOS JÚNIOR, Dioclécio. Tratado de pediatria. In: **Tratado de pediatria**, 5ª edição, v. 2, 2022.
- MAGALHÃES, Amanda Gabrielly et al. MONONUCLEOSE INFECCIOSA E SUA VARIABILIDADE CLÍNICA: UM RELATO DE CASO. **CIPEEX**, v. 2, p. 894-900, 2018.
- PEREIRA, MARIA LUIZA CUNHA et al. FARINGOTONSILITES AGUDAS-REVISÃO DE LITERATURA. **Uingá Review Journal**, v. 16, n. 1, 2013.
- PEIXOTO, Annelyse et al. Febre reumática: revisão sistemática. **Rev. Soc. Bras. Clín. Méd**, 2011.
- PISSINI, Mariana M.; PEIXOTO, Magda S. Uma Abordagem Fuzzy para Auxiliar no Diagnóstico Médico das Faringotonsilites. **Proceeding Series of the Brazilian Society of Computational and Applied Mathematics**, v. 6, n. 2, 2018.
- SIH, Tania et al. Tonsilite viral ou bacteriana. **SiH T, Chinski A, Eavey R, Godinho R. IV Manual de otorrinolaringologia pediátrica da IAPO. Guarulhos: Lis Gráfica & Editora**, p. 57-60, 2006.
- SIH, Tania. Faringotonsilites Agudas. **Manual de otorrinolaringologia pediátrica da IAPO**, p. 55-65, 2015.