

AIRWAY INFECTION IN THE PEDIATRIC COMMUNITY LINKED TO THE APPROPRIATE TREATMENT OF EACH CONDITION

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Abstract: Sinusitis and rhinitis are inflammations of the nasal mucosa, especially in children, but they are difficult to diagnose, as they are confused with other similar problems. The use of antibiotics to treat viral infections in children is inappropriate. Treatment is often empirical, based on microbiological data such as cultures and antimicrobial sensitivity, varying for acute and chronic treatment in terms of doses and duration. There is divergence of criteria on these aspects.

INTRODUCTION

Sinusitis and rhinosinusitis are affections of the nasal mucosa, which promote inflammation in the region. Its prevalence is in the pediatric population, being difficult to diagnose, given that the aforementioned condition usually overlaps with similar ones. Although common, the practice of prescribing antibiotics for children affected by viral infections is considered improper.

This treatment is usually carried out empirically, based on microbiological data, such as cultures, *in vitro* antimicrobial sensitivity, differing acute and chronic treatment, doses and treatment time, and there is also a great divergence of criteria regarding dose and period. adequate.

GOAL

Address airway infections in the pediatric population and explore the appropriate treatment for each clinical condition aimed at the pediatric population.

METHODOLOGY

The present work consists of a qualitative review of the literature that sought to address results found in research on the pediatric and otorhinolaryngological theme, whether in a comprehensive, orderly or systematic way. To carry out the work, the following steps were

followed:

1. Selection of the corresponding themes;
2. Selection of samples found and used;
3. Analysis of the characteristics of the original research;
4. Analysis of the obtained results;
5. Carrying out the review.

The scientific literature databases and the techniques used in carrying out the review were Google Scholar, Scientific Electronic Library Online (SciELO), Virtual Health Library, Latin American and Caribbean Literature in Health Sciences (LILACS), using the search engines: "IVAS in pediatrics"; "treatment for pediatric sinusitis" and "treatment for pediatric rhinosinusitis".

Thus, the present work seeks not only to analyze the otorhinolaryngological interface within the different thematic points correlated to the pediatric front, aiming to shed light on an educational path, clarifying and raising awareness about its proper treatment.

DISCUSSION

Inflammatory involvement of the nasal and sinus mucosa are called rhinosinusitis and rhinitis, with high impairment of the quality of life of affected children. Commonly, its development is due to the fact that it precedes viral infections and allergenic processes that affect the airways.

Rhinosinusitis is most commonly used to describe the infectious and inflammatory processes that affect the paranasal sinuses. Considering that, commonly, rhinitis and sinusitis are concomitant diseases or have continuity with each other, both can occur in isolated or dissociated forms, whether of allergic or infectious origin.

In childhood, the development of rhinitis without involvement with sinusitis is rare. Prognosis correlates with proper clinical diagnosis. For this, the notion of pathophysiology, the identification of the

affected sinus, as well as its duration are decisive for the choice of treatment.

For the correct identification of the affected sinus, one must know that the sinuses are structures that surround the nasal cavity, having a pneumatic character, constituting four paired cavities, maxillary, ethmoid, sphenoid and frontal.

In Brazil, the involvement of sinuses and rhinosinusitis occurs mainly in children under 5 years of age. Of these children aged less than 5 years, 49.8% of the consultations were preceded by an upper airway infection. The hospitalization rate is another indicator of severity, directly influenced by environmental factors, causing greater outpatient demand in the winter months.

Furthermore, bacterial rhinosinusitis is at least 80 times less frequent than viral infection of the paranasal sinuses. Viral infections treated with antibiotics in order to prevent the development of complications are ineffective, in addition to the fact that the exacerbated use of antibiotics, as well as other inadequate treatments that were not mentioned here, cause several problems for the child and for the community in general. This fact stems from the fact that adverse reactions caused by antibiotics are severe and culminate in bacterial resistance, interfering with the diagnosis of potentially serious bacterial diseases, preventing the growth of agents in laboratory cultures, raising treatment costs and, finally, favoring the growth and spread of these future resistant bacterial strains.

Patients affected by rhinosinusitis have, at first, sinus mucosal aggression, with abnormal mucus production or ciliary function abnormality, for example. The change in the style and living conditions of the population that directly or indirectly led to it, as well as the aggression to the sinus mucosa, must also be mentioned.

Aggression to the nasal mucosa can

culminate in edema, in addition to causing blockage of the affected paranasal sinus ostium. Consequently, there will be no airflow, impairing local drainage, stagnating secretions locally. In time, there is also a change in the gaseous metabolism of the mucosa, interfering with the physiological functioning of the eyelashes.

The infection becomes more prone to aggravation and dissemination through the airways due to its thickening and consequent change in local pH, providing a suitable environment for the growth of bacteria that will further damage the mucosa and maintain the vicious cycle of sinusitis.

Inflammation of the maxillary sinus can cause changes in the epithelial coverage of the maxillary sinus wall, causing the development of atypical epithelium, which may lead, in more severe cases, to metaplasia.

For an adequate treatment, one must know the etiology, remembering that, in acute cases, an upper airway infection will probably evolve into a simple flu-like syndrome, which includes sore throat and runny nose lasting between 3 and 6 days. While the conditions with cough and nasal discharge last less than 10 days in children. If the condition turns out to be bacterial, it is necessary to use antibiotics.

In Brazil, the most common etiological agents of rhinosinusitis are the following: *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis*, *Staphylococcus aureus* and beta hemolytic *Streptococcus*.

The occurrence of penicillin-resistant *Streptococcus pneumoniae* makes the empirical treatment of the disease difficult. Consequently, there is a reassessment of the antibacterials of choice and renewed interest in microbiological monitoring research.

The rampant use of antibiotics is responsible for altering the normal microbiota

of the upper airways. If the body loses these microorganisms, the infection can delay in the body, making its healing process difficult. Therefore, antimicrobial treatment must be effective against pneumococcus and *H. influenzae*.

In cases of mild infections, amoxicillin must be used as the first treatment option. In case of dependence during clinical evolution, when the diagnosis is rhinosinusitis, it must be associated with clavulonate. If replacement of amoxicillin is necessary, the options that can be used are beta-lactams, a second-generation cephalosporin, such as cefaclor, axetilcefuroxime and cefprozil, for example. In addition to third-generation oral cephalosporins, such as cefpodoxime, cefixime and cefetamet pivoxil, in case the other options are difficult to administer and require an interval between doses, but at a high cost.

When there is chronic rhinosinusitis, treatment includes the use of metronidazole associated with a first-generation (cephalexin) or second-generation cephalosporin (cefaclor, cefprozil, cefuroxime), active against *S. aureus*. If the treatment is intra-hospital and there is multidrug resistance to the environment, fourth-generation cephalosporins are used, such as cefepime or cefpirome and carbapenem, imipenem or meropenem. Vancomycin must be used for nosocomial oxacillin-resistant *S. aureus* infections.

The abusive and unrestrained use of medications, such as nasal vasoconstrictors, can cause the so-called "rebound effects", such as, in the aforementioned case, rhinitis due to medication, with the possibility of causing secondary vasodilation. Finally, it can also cause changes in the nasal mucosa, such as loss of eyelashes and metaplasia of hair cells.

CONCLUSION

Inflammation of the nasal mucosa and paranasal sinuses is called rhinosinusitis and rhinitis. Usually caused by viral infections and allergies in the airways, rhinosinusitis describes inflammation in the paranasal sinuses, often associated with rhinitis. Accurate diagnosis is crucial, considering the pathophysiology and identification of the affected sinus.

The sinuses are cavities surrounding the nasal cavity, including the maxillary, ethmoid, sphenoid, and frontal sinuses. In Brazil, rhinosinusitis and sinusitis are more common in children under 5 years of age, with almost half of cases in this age group related to upper airway infections.

Bacterial rhinosinusitis is less common than viral infection in the paranasal sinuses. Treating viral infections with antibiotics is ineffective and can cause problems for children and the community, leading to serious adverse reactions, bacterial resistance and high costs.

Patients with rhinosinusitis suffer aggression to the sinus mucosa, leading to abnormal mucus production and abnormalities in ciliary function. Lifestyle changes also contribute. The aggression causes edema and blockage of the ostium of the affected sinus, resulting in lack of air flow, impairing local drainage and causing stagnation of secretions.

Treatment involves amoxicillin for mild infections and association with clavulanate for severe cases. Other options include beta-lactams, second- and third-generation cephalosporins. For chronic rhinosinusitis, treatment involves metronidazole with cephalosporin, active against *S. aureus*. In hospital settings with resistance, fourth-generation cephalosporins, carbapenems, and vancomycin are options.

Finally, it must also be noted that the

excessive use of nasal vasoconstrictors can cause rhinitis due to medication, altering the

nasal mucosa, including loss of eyelashes and metaplasia of hair cells.

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