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Professional paper

TREATMENT OF UPPER RESPIRATORY TRACT INFECTIONS WITH THIRD GENERATION CEFALOSPORINE IN PRESCHOOL CHILDREN

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Abstract

Cephalosporins are the third-generation beta-lactam antibiotic. Respiratory infections make up the most common 70% of preterm infants, occurring mainly between the ages of 3 and 6. s, this wrestling has a seasonal course with its peak in the autumn period - and less in the spring.
Purpose of the work: To show the effect of third generation cephalosporins on upper respiratory infections in preschool age, and their negative effects.
Material and methods: Occasional cases with signs of viral and bacterial infections of the upper respiratory tract have been studied. aged 3 to 6 years.
In all cases, hemograms were performed with leukoformula, CRP, throat swab, throat inspection, lung auscultation, and anamnestic data.
Results obtained: According to the results obtained from 58 suspected bacterial cases in 35 cases we diagnosed bacterial infection according to the protocol for bacterial infections. Out of 58 suspected cases of bacterial infections in 35 cases we have isolated (isolated) streptococcus B haemolyticus of group A, H. influenza, pneumococcus, staphylococci, etc.), in 23 cases in the throat swab results (adenoviruses, influenza virus, parainfluenza, syncytial respirator, etc.).
Conclusion: Cephalosporins of the third generation are less toxic to the kidneys and heparin, so the treatment has resulted in extremely high positive effects and remediation of the children's health condition.
Cephalosporins of the third generation remain one of the possible sites of good treatment of the above respiratory infections as an alternative to penicillin.
Oral cefixime treatment has shown rapid results since the third day of treatment, normalizing fever, cough, and general condition in children.

Keywords: Cephalosporins of the third generation, upper respiratory tract infections.

1. Introduction

Respiratory tract infections (RTIs) are any infection of the sinuses, throat, respiratory tract, or lungs. Upper respiratory tract infection or "common cold" is a complex of symptoms usually caused by several families of viruses; these are rhinovirus, coronavirus, parainfluenza, respiratory syncytial virus, adenovirus, human metapneumovirus, and influenza. Occasionally, enterovirus is implicated in summer. Recently, the newly discovered bocavirus (associated with parvovirus) has also been linked to Upper Respiratory Tract Infection (Allander T. Human et al. 2008) (Green RJ et al. 2006).

Upper respiratory tract infection commonly occurs in children and adults and is a leading cause of mild morbidity. Upper respiratory tract infections occasionally have serious consequences.

Cephalosporins are a group of antibiotics developed in the middle of the last century. Their name derives from the name of a fungus "Cephalosporium acremonium", from which was obtained a composition with bactericidal properties. This discovery, which occurred in 1948, was the starting point for the development of a new class of antimicrobials.

Cephalosporins are antibiotics that can treat a variety of bacterial infections. (The American Society of Health-System Pharmacists et al. 2014). They kill gram-positive and some gram-negative bacteria by interrupting the growth of the bacterial cell wall (The American Society of Health-System Pharmacists et al. 2014). Cefixime is an antibiotic used to treat a variety of bacterial infections: otitis media, angina, pneumonia, urinary tract infections, bacterial endocarditis, etc. (The American Society of Health-System Pharmacists et al. 2016) (Drugs.com et al. 2019). Common side effects include diarrhea, abdominal pain, and nausea. (The American Society of Health-System Pharmacists et al. 2016) Serious side effects may include allergic reactions and diarrhea.

Not recommended for children with a history of severe penicillin allergy (Stuart MC et al. 2009). It seems to be relatively safe during pregnancy. Cephalosporins have a mechanism of action by disrupting the bacterial cell wall resulting in their elimination.

Cefixime was patented in 1979 and approved for medical use in the United States in 1989. It is on the list of essential drugs of the World Health Organization (World Health Organization et al. 2019). It is available as a generic drug in the United States (Drugs.com) et al. 2020) Cephalosporins are third-generation beta-lactam antibiotics (The American Society of Health-System Pharmacists et al. 2014), (Brunton, Laurence L. et al. 2011)

Cephalosporins are not effective against infections caused by methicillin-resistant Staphylococcus aureus (MRSA), most Enterococci, or Pseudomonas (The American Society of Health-System Pharmacists et al. 2014).

Cephalosporins can be used in those who have mild or moderate allergies to penicillin.

However, it is not recommended for those with severe penicillin allergies (The American Society of Health-System Pharmacists et al. 2014).

Use during pregnancy or breastfeeding does not appear to be harmful to the baby (The American Society of Health-System Pharmacists et al. 2014), (Australian Government et al. 2014), (Wendy Jones et al. 2013). Can be used on children and those over 65 years old. Those with kidney problems may need dose reduction (The American Society of Health-System Pharmacists et al. 2014).

Cephalosporins were discovered in 1967 (Hey, Edmund et al. 2007), (Robert B Morin et al. 2011).

They were first applied in 1969 and 1970 (McPherson et al. 2007), (Ravina Enrique et al. 2011). Generic versions of drugs are available under other trade names.

In 2019, they were the 83rd most prescribed drug in the United States, with more than 9 million prescriptions. (World Health Organization et al. 2019), (Drug Usage Statistics et al. 2021). In Canada, was the fifth most common antibiotics used in 2013 (Public Health Agency of Canada et al. 2015).

In Australia they are one of the 15 most prescribed medications. (Australia's Health 2012 et al. 2017).

In Australia, they are one of the 15 most prescribed medications. (Australia's Health 2012 et al. 2017).

Respiratory infections are the most common cause in 70 % of preschool children, who appears mainly during the years 3 to 6 of life, this disease has a progressive peak with its peak in autumn and winter, spring, and spring. In 70 % of patients, the cause is the virus, and the rest is with bacterial etiology, etc. The treatment is intended to treat the child's wall from the respiratory and metabolic point of view, it is not advisable from the beginning administration of antibiotics. The critical phase lasts 48-72 hours, and is as important as the treatment of upper respiratory infections with bacterial etiology taking into consideration the fact that you are infected can also affect the pulmonary parenchyma, so streptococcus pneumonia occurs in the period January - June and requires mandatory antibiotic treatment are cephalosporin which in the preschool period have an unusual application and positive course of the upper respiratory tract infection (E.Pistulli et al . 2011)

PURPOSE: To show the effect of cephalosporins of the third generation on upper respiratory infections in preschool age, and the negative effects of cephalosporins of the third generation.

MATERIAL AND METHODS: Random cases have been studied, with signs of bacterial infections of the

upper respiratory tract at the age of 3-6 years. In all cases, a hemogram was performed with leuko- formula, CRP, throat swab, throat inspection, lung auscultation, and amnesty natan data.

RESULTS: The study was carried out in the period January-June 2021, in I PHPEDIATRICS Tetovo, Center for Public Health Tetovo, Clinical Laboratory Tetovo.

A total of 58 children with signs characteristic of bacterial infections of the upper respiratory tract were analyzed out of a total of 396 children (table 1, graph 2) with signs of respiratory infections of the upper respiratory tract. above as: rapid onset of wrestling, headache, severe pain of the throat, temperature over 39, enlarged and painful submandibular glands on palpation, in the mucosa of the uvula and soft palate in the presence of petechial hemorrhage, in all these patients is performed hemogram, CRP (cut off> 40 mg / L), in 48 cases a throat swab was performed.

According to the results obtained from 58 suspected bacterial cases in 35 cases, we diagnosed bacterial infection according to the protocol for bacterial infections (table 2, graph 2).

Leukocyte increase with neutrophils resulted in 41 (bacterial infection) cases in this group CRP increased in 38 cases (cut off> 40 mg / L), in 17 cases we have an increase in leukocytes with lymphocytosis ë (viral infection), increase in CRP in n cut –off> 40 mg // L.

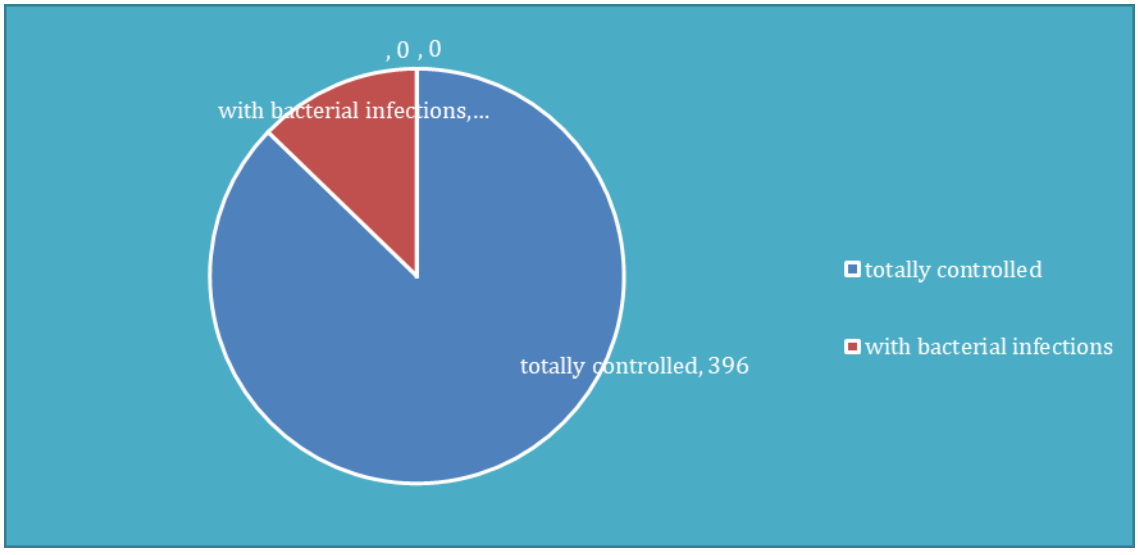
From 58 cases suspected as bacterial infections in 35 cases we have isolated in antigen swabs (streptococcus B haemoliticus of group A, H. influenza, pneumococcus, staphylococci), in 23 cases in striatal swabs results (, influenza virus, parainfluenza, respiratory syncytial, coxsackie viruses, etc.).

Tabular presentation of results

There were analyzed 58 children with characteristic signs of bacterial infections of the upper respiratory tract from all 396 children with signs of respiratory infections of the upper respiratory tract. **Table 1**.

Patients with respiratory infections		
Totally suspected of respiratory infections	396	100%
Suspected of upper respiratory bacterial infections	58	14.64%

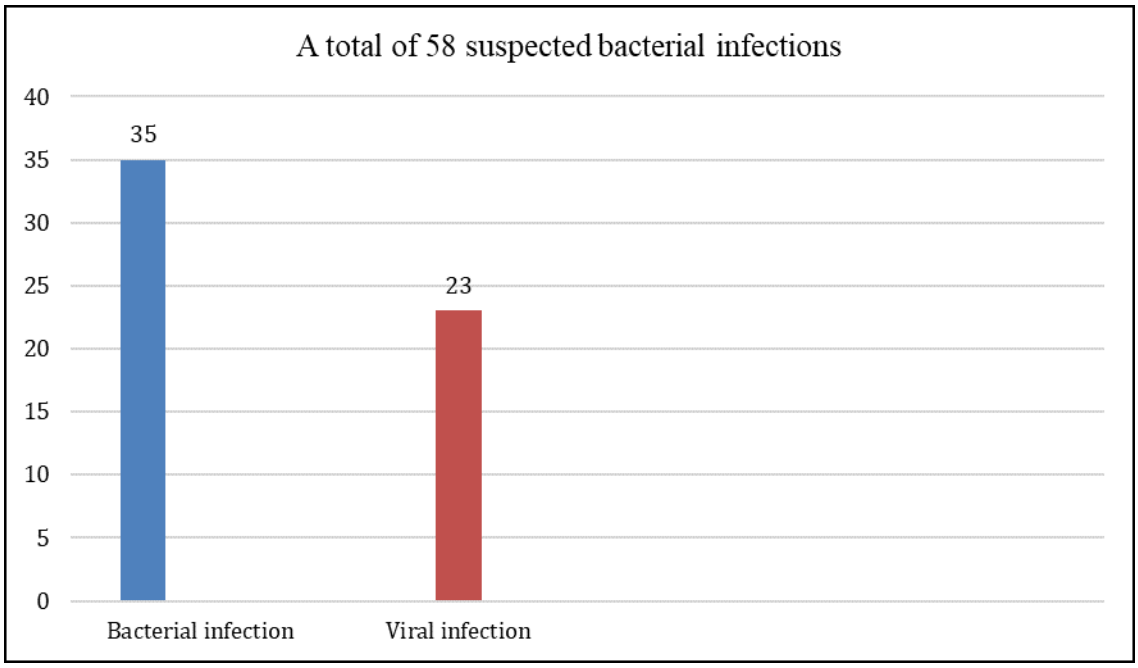
There were analyzed 58 children with characteristic signs of infection of the upper respiratory tract from a total of 396 children with signs of infections of the upper respiratory tract. **Graph 1**.



Statistical data according to the suspects for bacterial infection results obtained from 58 suspected bacterial cases in 35 cases we diagnosed bacterial infection according to the protocol for bacterial infections **Table 2**.

Suspected of bacterial infections	cases	percentage
bacterial	35	60.34%
viral	23	39.34%
All over the site	58	100%

Statistical data according to the suspects for bacterial infection results obtained from 58 suspected bacterial cases in 35 cases we diagnosed bacterial infection according to the protocol for bacterial infections **Graph 2.**



2. Discussion

The most common respiratory tract infection is the common cold. Respiratory tract infections are any infection of the sinuses, throat, respiratory tract, or lungs. Respiratory tract infections are one of the main reasons why people visit their doctor or pharmacist. According to the clinical picture and their localization, respiratory tract infections are divided into: a). upper respiratory tract infections with symptoms that cover: the sinuses, throat, and nose, and b). Lower respiratory tract infections, which affect: the airways and lungs Children tend to have more frequent upper respiratory tract infections compared to adults because they have not yet acquired immunity to many viruses that can cause these infections. Respiratory tract infections can spread in several ways. The common cold is infected by a cold environment through the air or by sneezing. If children stay close to someone who is ill, in a closed environment, they can also be spread through indirect contacts, for example. if you touch your nose or eyes children touch any infected object or surface. The best way to prevent the spread of infection is to practice good hygiene, such as regular hand washing with soap and warm water. Upper respiratory tract infections include: colds Common symptoms include

tonsillitis, nasopharyngitis, sinusitis, rhinopharyngitis, laryngitis, and the common flu. The most common symptoms are cough, nausea, headache, tears, sneezing, youth, muscle aches, and sore throat. The causative agents of acute infectious diseases of the upper respiratory tract are most often viruses (up to 95%). Each respiratory virus selectively affects a specific part of the respiratory tract and not all of the respiratory tract. A significant proportion of children attending preschool, as well as nosocomial infections, are mixed viral and bacterial infections. the upper respiratory tract is the most common disease in childhood. The respiratory tract is the most common site for the onset of infections which are most prevalent in the autumn and winter seasons. Respiratory tract infections represent a heterogeneous group of the most frequent acute infectious manifestations with complex symptomatology (Thomas Neumark et al. 2010).

Every child up to the age of two has an average of 4-6 episodes of upper respiratory tract infection. They are more common in autumn and winter, although it has not been proven that cold air affects the spread of viruses, or reduces resistance to viruses. (Azemi M et al. 2010)

Bacteria resistant to antimicrobial treatment have become a worldwide problem, possibly due to the overuse of antimicrobial drugs. The use of antibiotics is associated with the emergence and spread of resistance to the selection of organisms that have increased the ability to survive doses of antibiotics (Bronzwaer SLAM et al. 2002)

Causes of upper respiratory tract infections can be a large number of viruses and bacteria. Which manifest in children many diseases manifested by the common cold, rhinopharyngitis, rhinitis, sinusitis, acute pharyngitis, acute tonsillopharyngitis, acute pharyngitis, acute otitis media, and croup syndrome. Upper respiratory tract infections can be defined as self-limiting irritation and edema of the upper respiratory tract with concomitant cough. Upper tract infections include the nose, sinuses, pharynx, larynx, and major airways (Micah Thomas et al. 2020), (Wenzel RP et al. 2006)

Many studies have verified that the effect of antibiotics is not only related to the diagnosis and the etiological agent but also the severity of the symptoms. Therefore, it is preferred that treatment should consist of identifying the cause and optimizing the antibiotic.

According to the literature and data obtained, however, viral infections predominate in upper respiratory tract infections, but it is more important in the percentage of bacterial infections. to have a clear picture with the aim of a more fixed doctor since the consequences of post-streptococcal angina are severe negative effects on later development.

3. Conclusion

Diagnosis of respiratory tract diseases in children (upper or lower) in most cases depends on the anamnesis and physical examination of the child and requires proper recognition of symptoms and clinical picture. In conclusion, we can conclude that the way of treating infections in children should start that in the initial stages of the disease with antibiotics according to antibiograms in our cases we have treated them with third generation cephalosporins which drug was shown to be very effective and without side effects. Third generation cephalosporins are less nephrotoxic and hepatotoxic, so treatment is effective and beneficial for the mouse. Third generation cephalosporins remain one of the possible good medications _ for upper respiratory infections as an alternative concerning penicillin. In cases diagnosed as bacterial infections, oral cefixime treatment has given rapid results throughout the third day of treatment, normalizing fever, cough, and general condition in children.

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