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USE OF ANTIBIOTICS IN UPPER AND LOWER RESPIRATORY TRACT INFECTIONS

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Abstract

Introduction: Inflammatory respiratory diseases in childhood are frequent occurrences and account for about 70% of the general morbidity in childhood. Differentiating bacterial and viral infections as well as their early detection is very important in pediatric practice.
OBJECTIVE: Observe the use of antibiotics in upper and lower respiratory tract infections at pediatric age.
Material and method: The study is prospective, randomized, conducted in Tetovo Clinical Hospital, Pediatric Department and Clinical Biochemistry laboratory, during the period from January-March 2017. It includes 468 children. Verification of diagnosis included calculation, objective examination, anamnesis, CRP-cut-off> 40mg / l, morphological blood (leukocytes), peripheral blood smear, lung x-rays.
Results: With upper respiratory tract infections (tonsilopharyngeal) 254 cases (54.27%) out of which 176 (69.2%) cases have been viral infections and 78 (30.7%) have had bacterial infections according to the criteria. With respiratory tract infections (bronchopneumonia) of 214 or (45.72%) cases in 116 (54.2%) of cases resulted in viral infections and 98 (45.79%) resulted in bacterial infections.
It has been observed that in 72% of cases in both respiratory tract levels antibiotic therapy has been ordained.
Discussion: The current problem is the use of inexperienced antibiotics by the family members as well as the maternal physician who does not use diagnostic methods until the end
Conclusion Although diagnostic methods have difficulties, the benefits for children are great:
• Diagnosis can help reduce hospitalization
• Rational use of antibiotics.

Keywords : respiratory infections, antibiotics, anti-biotherapy.

INTRODUCTION

Infectious respiratory diseases in childhood are frequent occurrences, and account for about 70% of infections in general at childhood age.
Respiratory infections can be found in the upper or lower respiratory tract. Upper respiratory tract infections include: common flu, laryngitis, tonsillopharynitis, acute rhinitis, acute rhinosinusitis, acute otitis.
Lower respiratory tract infections include: acute bronchitis, bronciolitis, pneumonia, tracheitis. Infections of the respiratory tract are usually caused by bacteria (bacteria gram+ or gram-), viruses, while lately are often blamed the chemical agents (air pollution) and smoking, whether passive or active. Smoking is very harmful to young children and children in puberty. Symptoms of upper respiratory tract infections are expressed by sneezing, coughing, sore throat, especially during swallowing, headaches, lack of appetite, high temperature, dermatitis. Infections of the lower parts usually show apathy, dry and damp coughing, difficult breathing, drowsiness, abdominal discomfort and others (often difficult breathing may appear to the third most exaggerated tonsils). Better prevention of these infections is best done with the child's follow-up from the parents. This means that the child is absorbed by drinking liquids, ventilated the areas when they are standing, breathing in fresh air, eating healthy food (more fruit

vegetables and proteins for the right development), personal hygiene, affordable clothing. Many respiratory infections have viral etiology and are mainly caused by influenza virus, rhinovirus and adenovirus and do not need to be treated with antibiotics.
Differentiating bacterial and viral infections, and their early detection is very important in pediatric practice. Respiratory tract infections are the most common cause of antibiotic use. Antibiotic delivery has no age limit, but there is a limit on antibiotic age determination. The group of semi-synthetic penicillin can be given even at the earliest age, the antibiotic group that contains clavulanic acid - cephalophorine is not for small babies in the first 2-3 months. Actually, all antibiotics can be given regardless of the age limit , just need to be careful about dose and time interval. Usually, the smaller the child, the distance between the two treatments should be greater.
Korppi M1, Kröger L. Based on the studies conducted in Finland with serological blood tests, 88% of children with viral infections have CRP values cut off <20mg / l whereas in bacterial infections the value of CRP was> 40mg / l and this value was taken as a criterion for antibiotic treatment.
In order to identify repetitive infections, an objective examination, anamnesis, CRP-cut-off> 40mg / l, morphological blood (leukocytes), cramps, and radiography of the lungs should be used. CRP Cut off has been shown to be a useful predictor of infection detection bacterial and has led clinicians to reduce antimicrobial use. (Niman *et al.,* 2014, Pratt *et al.,* 2007). However, there are various data regarding the sensitivity and specificity of CRP as a marker in predicting bacterial infections (Simon *et al.,* 2004).
When given antibiotics due to viral infection, there will be no effect from it. 80% of respiratory infections in children are caused by viruses. Only 20% of cases require antibiotic therapy. Before we decide on the antibiotic, in addition to the clinical condition it is good to have a lab test, which will tell us whether it is a virus or a bacterium. It would be even better if microbiological tests can be made. Of course, you should wait 2-3 days and do not rush into giving therapy. By carrying out these tests or tests, apart from the fact that the bacteria will be found, we will also see how its sensitivity to antibiotics is, to which antibiotics it reacts and to whom not, and thus can be given therapy suitable. If the parameters surely tell us that it is a bacterial infection, we can release antibiotics without the need for additional laboratory and microbiological tests. Excessive use of antibiotics is directly related to increased bacterial resistance and may cause side effects such as gastrointestinal discomfort, diarrhea, allergic reactions, swollen redness and mycotic infections. Most respiratory infections are administered empirically. (NIHCEG 2014)
Consequently, antimicrobial treatment should take into account the microorganisms most closely related to infectious sites and their sensitivity to antibiotics, their pharmacokinetic characteristics, the negative effects and cost of therapy to be solved. However, the final decision regarding prescription of antibiotics lies with the clinician and will be decided depending on the clinical condition of the patient.

AIM OF STUDY

Determine the use of antibiotics in upper and lower respiratory tract infections at pediatric age.

MATERIAL AND METHODS

The study is prospective, randomized, conducted at the Clinical Tetovo Hospital, the Pediatric Department and the Clinical Biochemical Laboratory, in the period January 2017-March 2017. 468 middle-aged 2-6 year-olds were included.

To diagnose the diagnosis is calculated: objective examination, anamnesis, CRP-cutt-off> 40mg / l, morphological blood (leukocytes), microbiologic material, lung radiography.

RESULTS

With tonsillopharyngeal infections 254 cases with viral infections resulted in 176 or 69.2% cases and 78 (30.7%) had bacterial infections according to the diagnosis criteria.
With respiratory tract infections (bronchopneumonia) from 214 cases in 116 or 54.2% of cases resulted in viral infections and 98 (45.79%) resulted in bacterial infections according to the diagnosis criteria. From the results we see clearly dominated by viral respiratory infections.
Of the estimated total number of patients in both levels results in 62% of infections resulting in viral loads of 38% bactericidal.
From the anamnestic data we received in the admission of patients, it results that in 72% of patients an antibiotic has been used which has not been clinically determined.

Table 1. Infections of lower and upper respiratory tract

Tonsillopharyngitis	254
Bronchopneumonia	214

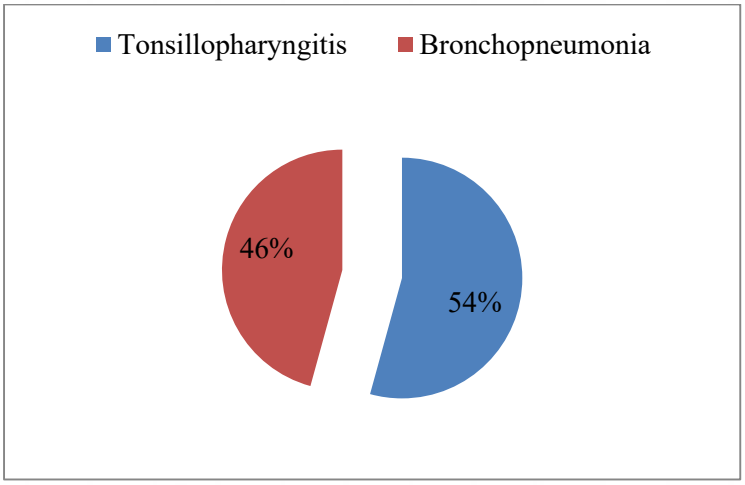

Figure 1. Infections of lower and upper respiratory tract

Table 2. Infections of upper respiratory tract

With viral infections	176
With Bacterial infections	78

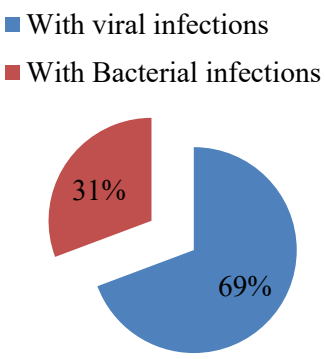

Figure 2. Infections of upper respiratory tract

Table 3. Infections of lower respiratory tract according to etiology

With viral infections	116
With bacterial infections	98

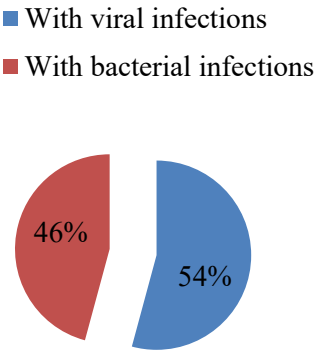

Figure 3. Infections of lower respiratory tract according to etiology

Table 4. Infections of upper respiratory tract according to etiology

With viral infections	292
With bacterial infections	176

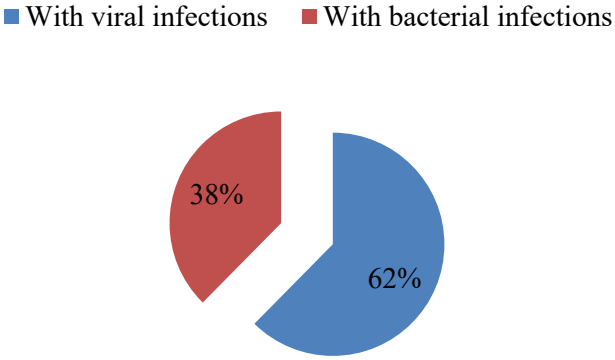

Figure 4. Infections of upper respiratory tract according to etiology

Table 5. Usage of antibiotics in respiratory tract infections

Without antibiotics	131
With antibiotics	337

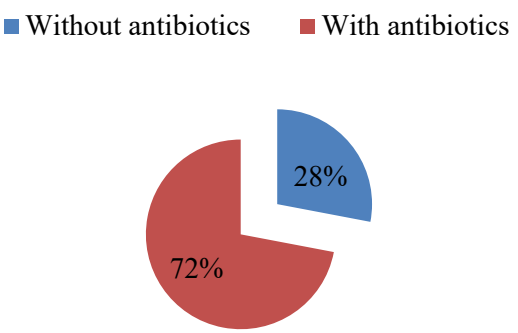

Figure 5. Use of antibiotics in respiratory tract infections

DISCUSSION

Antibiotics can be a life-saving treatment for children with bacterial infections and are the most commonly prescribed therapy for all medicines given to children (Nicolini *et al.,* 2014). However, antibiotics may also result in undesirable events, grass toxicity, and harmful effects on the intestinal microbiotics (Dethlefsen *et al. 2008,* Jernberg *et al.,* 2010) and the intestinal immune system.

Moreover, both at the individual and in the population level, excessive use of antibiotics promotes the development and transmission of antimicrobial resistance [Dethlefsenet al. 2008) International guidelines for the treatment of childhood diseases recommend antibiotic treatment for bloody fecal diarrhea and acute respiratory tract infections, but not for non-bloody diarrhea and for upper respiratory tract infections (WHO 2005, WHO 2015).

Interventions to promote rational use of antibiotics are critical to maintaining the effectiveness of available drugs (Goldman *et al.*, 2015- Kotloff *et al.*2013).

Differences in antibiotic usage practices around the world reflect changes in local treatment policies, barriers to access to care and the preferences of health care providers and mothers.

The availability of antibiotics without prescription to the physician varies, (Dethlefsen *et al.*, 2008, Pavlinac *et al.,* 2015) and laws to limit access to antibiotics are often poorly enforced (WHO 2005, Almaaytah et al., 2015, Gray et al., 2014 27).

In some environments, drug shortages may be a major limitation of antibiotic use (Mittal et al., 2001, Karras et al., 2003). Cultural preferences, such as high demand from mothers, also affect patterns of antibiotic use (Almaaytah *et al*., 2015, Gray *et al.,* 2014, Kutty *et al*. 2011, Mohanan *et al.* 2015).

Even when healthcare providers are aware of proper antibiotic indications, there may be differences between knowledge and practice (Dillip *et al.,* 2015)

The burden of bacterial resistance has increased over recent years, mainly due to inadequate antibiotic use. More recently, it has become an urgent public health concern due to its impact on hospitalization, increased total cost of treatment and mortality associated with infectious disease It is important that healthcare providers have a dialogue with their patients and provide education about the consequences of using and misuse of antibiotics in viral infections, which may lead to antimicrobial resistance, increased costs and adverse effects. The current problem is the use of unbiased antibiotics by the family members as well as by the doctors who do not use diagnostic methods to the end.

CONCLUSION

Although diagnostic methods have difficulties, the benefits for children are great. Diagnosis can help reduce hospitalization

Rational use of antibiotics is of particular importance in improving health care and for this reason it poses a global challenge imposed as a result of unfavorable data on the use of antibiotics. The World Health Organization estimates that a high percentage of antibiotics are depicted and used incorrectly, meaning that patients are often taken without bacterial infection, inadequate dose and duration, thereby opening the doors to benefiting antibiotic resistance, and so endangers the opportunity for antibiotic treatment when they really need it. To prevent unreasonable use of antibiotics, it is necessary first to define exactly what in practice means unreasonable use of antibiotics, what are the causes and dimensions of the occurrence of this phenomenon and what are the consequences? Identify what the parties involved and in the end what mechanisms should be set in order to promote the rational use of antibiotics. Workgroups should be formed that will disseminate educational materials for the rational use of antibiotics. For the extraordinary importance of rational use of antibiotics, it is primary to be aware of all the participants, ie the doctor who describes it, the antibiotic drug, the patient who consumes it as well as health policy holders who are responsible for shielding public health.

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