

Evaluation of the Predisposing Factors for Recurrent Respiratory Tract Infections in Iraqi Pediatric Patients.

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Abstract:

Recurrent respiratory tract infections are responsible for about 85% of all diseases in childhood, and are associated with significant morbidity and mortality. The aim of this study is to evaluate the main causes underlying recurrent respiratory tract infections in 176 pediatric patients aged 2 month to 4 year and weight from 4 to 11 kg referred to the child center hospital and Al-sader hospital prospective study.

All parents were given information sheet which then analyzed and the percentage of incidence of causes were recorded, we found that higher % related to many causes; mostly related to the parent like poor family education, mother carelessness, incomplete vaccination, other related to empirical diagnosis, and short course of treatment and type of antibiotic used. We conclude that the burden of respiratory tract infections in paediatrics is extremely high. Due to adequate diagnosis and causative therapies of these often recurrent respiratory tract infections bear substantial limits, preventive measures deserve priority. The mainstays are parent education, active immunizations strategies and nonspecific immunostimulation with bacterial products.

Key words: Recurrent respiratory tract infections, pediatric patients

تقييم العوامل المسببة لإصابات الجهاز التنفسي المتكررة في الأطفال المرضى العراقيين
فادية يعقوب الحمداني و بسمة زهير
فرع الصيدلة السريرية، كلية الصيدلة، الجامعة المستنصرية

الخلاصة:

أن التهابات الجهاز التنفسي المتكررة مسؤولة عن ما يقرب من 85% من الأمراض في فترة الطفولة، وهي مصحوبة بنسب مرضية ملحوظة وعدد كبير من الوفيات. أن الهدف من هذه الدراسة هو تقييم الأسباب الرئيسية التي تكمن وراء التهابات الجهاز التنفسي المتكررة في 176 طفلاً مريضاً تتراوح أعمارهم بين شهرين إلى 4 سنوات وتتراوح أوزانهم بين 4-11 كغم تم إحالتهم إلى مستشفى الطفل المركزي ومستشفى الشهيد الصدر. تم إعطاء كل الأباء ورقة معلومات تم تحليلها فيما بعد، وتم تسجيل نسب الأسباب الكامنة وراء هذه الأمراض. لقد وجد أن النسبة الأكبر لأسباب المرض كانت متعلقة بالأبوين من حيث قلة التعليم وإهمال الأم والتلقيحات غير المكتملة، وبعض الأسباب الأخرى كانت التشخيص التجريبي، مدة المعالجة القصيرة ونوع المضاد الحيوي المستعمل. نظراً لكون التشخيص الوافي وعلاج هذه الأمراض ينطوي على تحديات كبيرة، فإن الإجراءات الوقائية تستحق الأولوية. الإجراءات المهمة في هذا المجال هي تثقيف الوالدين، إجراء التلقيحات اللازمة والكاملة وتحفيز الجهاز المناعي بمستخلصات بكتيرية معينة.

Introduction:

Respiratory tract infections RTIs are common and frequent diseases, they present one of the major complaints in children and adolescents. [1] Respiratory tract infections (RTIs), mainly involving

the upper airways, are common in children and their recurrence constitutes a demanding challenge for the paediatricians.

The child with recurrent respiratory infections presents a difficult diagnostic challenge. It is necessary to discriminate

between those with simply-managed cause for their symptoms such as recurrent viral infections or asthma, from the children with more serious underlying pathology such as bronchiectasis or immune dysfunction.^[2]

Acute infections of the airways in pediatrics continuously play an important role world-wide. The impact of these diseases is shown by their high incidence; substantial morbidity and potential consequences; tendency of over diagnosis, especially in streptococcal pharyngitis and acute otitis media; the associated overuse and misuse of antibiotics; and contribution to high healthcare costs and indirect social costs^[3,4].

The majority of children with recurrent RTIs are normal, however, it is important to consider atopy and underlying immunodeficiency.^[4] The vast majority (80–90%) of these infections are caused by viruses. Uncomplicated upper respiratory tract infections are usually self-limiting and do not require antibiotics. However, several bacterial complications can arise, such as acute otitis media, sinusitis and bronchitis^[5].

The high incidence of RTIs in young infants and preschool children are explained by increased exposure to respiratory pathogens at home or in child care centers; environmental factors; or defects in the immune system.^[6,7] Crowded conditions, like those in day-care settings, favor the colonization and spread of pathogens causing RTIs.

Also environmental risk factors include passive smoking, exposure to pollutants and absence of breast-feeding^[8]. Aim of our study is to evaluate the main causes underlying recurrent respiratory tract infections in pediatric Iraqi patients.

Materials and Methods:

A total of 176 sample including children aged between 2 month and 4 years

and weighing from 4 to 11 kg which are collected from The Children's Central Hospital and Al-Sader Hospital with recurrent upper respiratory tract infections were participate in the study.

The survey was conducted between October 2011 and march 2012. We recorded prospective information from case sheet of patients and from the parents. We used questionnaire type survey that was elaborated and administered to patients who were found in the hospital, data validation is essential to ensure correct interpretation and meaningful comparisons.

A semi-structured interview protocol was also used in this study. The questionnaire selected to suit the main objective of our study depending on other similar researches^[9, 10, 11].

All parents were given information sheet which include different questionnaire which then analyzed and categorized into 3 groups:

Group 1: Incidence of recurrent RTIs according to related causes.

Group 2: Incidence of treatment failure according to compliance.

Group 3: Incidence of RTI related to course of treatment.

Results:

Regarding the incidence of recurrent RTIs, the higher % was for poor educated families, rich economic state families, incomplete vaccination & empirical diagnosis as shown in table-1. Regarding causes of failure, the higher % was for mother carelessness as shown in table-2.

Regarding Incidence of recurrent RTIs according to treatment course, the higher % was for short course as shown in table-3.

Table-1: Incidence of recurrent respiratory tract infections related to different causes in Iraqi pediatric patients.

	Related causes	Incidence of recurrent RTIs %
1	Family education state:	
	Non-educated	24.4%
	Poorly educated	51.5%
	Medium education	20.6%
	Highly educated	3.5%
2	Family economic state:	
	Poor	15.7%
	Medium	32.8%
	Rich	52.5%
3	Vaccination status:	
	Complete	22.4%
	Incomplete	77.6%
4	Antibacterial therapy:	
	Cefotaxime	78.7%
	Ceftriaxone	21.3%
5	Diagnosis pattern:	
	Culture and sensitivity	40.8%
	Empirical	59.2%

Table-2: Incidence of treatment failure of pediatric patients with RRTIs according to compliance

Cause of failure	Incidence of treatment failure%
Mother carelessness	48.4%
Incomplete treatment course	35.2%
No response to treatment	16.4%

Table-3: Incidence of recurrent respiratory tract infections related to the course of antibacterial treatment.

Treatment course	Incidence of recurrent RTIs%
Short course (3-4 days)	77.0%
Long course (7 days)	23.0%

Discussion:

In table (1) we are showing that a higher percentage of incidences of recurrent RTIs related to many causes like: poorly educated family, incomplete vaccination, empirical diagnosis and the use of antibiotic available in hospitals in spite of its effectiveness in this type of infection and without doing culture/sensitivity test.

In table (2), we are showing that a higher percentage of incidence of treatment failure was related to mother carelessness, while in table (3) the highest percentage goes to short course of treatment.

The highest rate of a low educational status was noted in the study, indicating that this could be a factor for the low response rate^[9].

The association of parental education with child health may arise because educated parents are more efficient 'producers' of child health ('productive efficiency') through adopting better child-care practices or superior hygiene standards^[12]. Recurrent RTIs are a common problem mainly in preschool age, usually due to the presence of unfavorable environmental conditions, including early socialization, as well as the immaturity and inexperience of the immune system^[13], so that most of children who are susceptible to recurrent respiratory infections should probably be given vaccinations against influenza viruses and pneumococci. The influenza vaccine must be given every fall to protect against the current year's specific flu strain. The pneumococcal vaccine (23-valent pneumococcal polysaccharide vaccine), which is used against *Streptococcus pneumoniae*, provides protection for many years, and some experts now recommend it for children with recurrent infections who are over two years^[14].

Additionally, the assessment of children with RRI is demanding; it requires close consideration of the history and examination, and in the diagnosed cases, extensive investigations. Early and accurate diagnosis is essential to ensure that optimal treatment is given and to minimize the risk of progressive or irreversible lung damage. The challenge for the physicians is to distinguish between the child with self-limiting or minor problems and the child with serious, perhaps progressive lung disease^[15]. Antibiotics should be chosen depending on age, socioeconomic status, severity of infection and the type of organism expected and always given in adequate doses and proper duration.^[16]

Beside that, the development and spread of antibacterial resistance in bacteria that commonly cause community-acquired RTIs is a major global healthcare problem. Unnecessary antibiotic therapy

(overuse) and poor therapeutic choice, dosage and/or duration (misuse) both contribute to bacterial resistance, avoidable toxicity and increased cost. Hence, improving antibacterial use in childhood RTIs is an important challenge for physicians in charge^[17, 18]. Rational approach to diagnosis and management of recurrent respiratory infections is needed, or else the child is subjected to unnecessary investigations and multiple drugs. Prompt recognition of infections and aggressive treatment are essential to avoid the life threatening complications and improve prognosis^[11].

We conclude that many factors contribute to the incidence of recurrent respiratory tract infections in Iraqi pediatric patients, mainly the effect of parents (especially mothers), the carelessness regarding the vaccination, beside the improper use of antibiotics chosen and incomplete dosage given.

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