



Antimicrobial Agent Preference for the Diagnosis of Acute Tonsillopharyngitis in Family Practice: Guidelines or Personal Choices?

Aile Hekimliğinde Akut Tonsillofarenjit Tanısında Antimikrobiyal Ajan Tercihi; Kılavuzlar mı, Kişisel Tercihler mi?

Fatma İşli¹, Mesil Aksoy¹, Ali Alkan¹, Ateş Kara²

¹ Turkish Medicines and Medical Devices Agency of the Ministry of Health, Ankara, Turkey

² Department of Pediatric Infectious Diseases, Hacettepe University School of Medicine, Ankara, Turkey

Abstract

Objective: While acute otitis media is the most important reason of antibiotic use in infancy and early childhood, acute tonsillopharyngitis is the main reason of antibiotic use in school-age children and adolescents. When it is considered that the unwanted effects of antimicrobial agent use rise to prominence especially today, antibiotics are recommended to be used in absolute necessity and in the most constricted efficiency range. This study aimed at examining the distributions of antimicrobial agents prescribed with the diagnosis of acute tonsillopharyngitis between January 1, 2012 and December 31, 2012 and their conformity to the guidelines.

Material and Methods: Electronic prescription data of family physicians collected through Family Practice Information System were analyzed using Prescription Information System.

Results: Prescriptions with single-diagnosis of acute tonsillopharyngitis and their content were evaluated. It was seen that a total of 13.323.611 prescriptions were given in that period, the agent most commonly found in these prescriptions were amoxicillin-clavulanate and cefuroxime and cefdinir followed that combination.

Conclusion: These results demonstrated beyond our personal observations that there is a frequent wide-spectrum and improper antimicrobial agent use under acute tonsillopharyngitis diagnosis in family practice in our country.

Keywords: Acute tonsillopharyngitis, antibiotics, amoxicillin-clavulanate, cefuroxime, cefdinir

Özet

Giriş: Antibiyotik kullanımının süt ve erken oyun çocukluğu döneminde en önemli nedeni akut otitis medya iken okul çocukluğu dönemi ve adölesan dönemde akut tonsillofarenjitdir. Özellikle antimikrobiyal ajan kullanımının istenmeyen etkilerinin günümüzde daha ön plana çıktığı düşünüldüğünde, mutlak gerekli olduğunda ve mümkün olan en dar etkinlik yelpazesinde antimikrobiyal ajan kullanımının tercih edilmesi önem kazanmaktadır. Biz bu çalışmamızda, ülkemizde aile hekimleri tarafından 1 Ocak 2012 ve 31 Aralık 2012 tarihleri arasında akut tonsillofarenjit tanısı ile reçete edilen antimikrobiyal ajanların dağılımını ve bunların kılavuzlarla uyumluluğunu incelemek istedik.

Gereç ve Yöntemler: Aile hekimlerinin Aile Hekimliği Bilgi Sistemi (AHBS) aracılığıyla toplanan elektronik reçete verilerini, Reçete Bilgi Sistemi (RBS)'ni kullanarak inceledik.

Bulgular: Tek tanıli akut tonsillofarenjit reçetelerini ve içeriğindeki antibiyotikleri değerlendirdik. Bu dönemde toplam 13.323.611 reçetenin sadece akut tonsillofarenjit tanısı ile oluşturulduğunu ve bu reçetelerde en çok bulunan ajanın amoksisilin-klavulanat olduğunu, sefuroksimin ve sefdinirin ise bunu takip ettiğini gördük.

Sonuç: Bu sonuçlar ile ülkemizde aile hekimliğinde tonsillofarenjit tanısı altında çok yaygın olarak geniş spektrumlu ve uygun olmayan antimikrobiyal ajan kullanımının olduğunu, kişisel gözlemlerin ötesinde göstermiş olduk.

Anahtar Kelimeler: Akut tonsillofarenjit, antibiyotik, amoksisilin-klavulanat, sefuroksim, sefdinir

Correspondence Address / Yazışma Adresi:

Ateş Kara

Hacettepe Üniversitesi Tıp Fakültesi, Çocuk Enfeksiyon Hastalıkları Bilim Dalı, Ankara-Türkiye

E-mail: ateskara@hacettepe.edu.tr

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Introduction

Upper respiratory tract infections constitute the most frequently encountered reasons of antibiotic use in childhood (1). Acute otitis media, acute sinusitis, and acute tonsillopharyngitis are the leading factors for antibiotic use in upper respiratory tract infections. During childhood, while acute otitis is the most frequent reason for antibiotic use from the first months of life until two-three years of age, acute tonsillopharyngitis becomes the primary factor for antibiotic use as of four-five years of age. As indicated in a report by the American Pediatric Academy aimed at reasonable antibiotic use in upper respiratory tract, antibiotics are prescribed in a vast majority of applications to outpatient clinics (2). While this number makes up nearly one of every 5 doctor visits, total antibiotic prescriptions is 50 million (2,3). All microorganisms which are agents of acute tonsillopharyngitis cause clinical pictures that ameliorate within its natural course (1,4). Therefore, the aim in treatment is oriented at preventing acute rheumatoid fever which is a probable non-suppurative complication of Group A beta-hemolytic streptococcus rather than ameliorating the clinical picture (1,3,5). To that end, the therapies recommended in either guidelines or reference materials are in the way of penicillin and amoxicillin, whose efficacy has not changed since their inception in clinical use, and macrolides or cephalosporin in case of penicillin allergy (1,3-7). The evaluation of the contents of doctors' prescriptions contributes to the development of necessary regulations aimed at determining the state of antibiotic use and problems of unreasonable drug use. The aim of this study was to investigate the antibiotics prescribed in cases in whom acute tonsillopharyngitis was the only diagnosis established by family physicians.

Materials and Methods

In this study, the date range of January 1-December 31, 2012 that marked the period before the commencement of extensive education and studies regarding antibiotic use by Turkish Medicines and Medical Devices Agency of the Ministry of Health was evaluated. With the intention of evaluating the distribution of antibiotics prescribed in the diagnosis of acute tonsillopharyngitis, the electronic prescription data of the family physicians collected through Family Practice Information System (FPIS) in 2012 were analyzed retrospectively using Prescription Information System (PIS). All operation records of family physicians belonging to year 2012 were scanned through PIS which is a software that enables the prescription data to be analyzed and the prescribing habits of the physicians to be evaluated and give feedback to the physicians, and the number of prescriptions with acute tonsillopharyngitis was found. The number in item/box/cost parameters, Turkish Lira and percentage distributions of the antibiotics in prescriptions

with only one diagnosis were determined. Moreover, these prescriptions were also evaluated in terms of the presence of injectable antibiotics. The 2010 retail sales prices of the drugs were used for cost calculation. ATC (Anatomical Therapeutic Chemical) classification system (8) developed and recommended by World Health Organization and where different codes are given according to the anatomic structure the drug has an effect over and to the chemical, pharmacological and therapeutic characteristics of the drug was used for drug classifications.

Results

While it was determined that a total of 201.929.423 operations with diagnoses were performed through FPIS in 2012 by family physicians, it was seen that prescriptions were created for 55.63% of these operations (112.327.089 prescriptions).

13.323.611 of 112.327.089 prescriptions by family physicians were formed with the diagnosis of acute tonsillopharyngitis, showing that 11.86% of all prescriptions had only one diagnosis, that is acute tonsillopharyngitis. It was detected that antibiotics were included in 79.58% (10.602.764 prescriptions) of 13.323.611 prescriptions with the diagnosis of acute tonsillopharyngitis. It was seen that injectable antibiotics were prescribed in 4.69% (624.584 prescriptions) of acute tonsillopharyngitis prescriptions with a single diagnosis.

When the drugs included in the prescriptions of family physicians were evaluated in general, it was found that the general item number of the drugs was 34.949.788. Antibiotics were included in 31.1% (10.868.939 items) and injectable antibiotics were included in 1.83% (639.569 items) of total drug items.

While 63.83% (232.025.179 TL) of total cost in prescriptions with acute tonsillopharyngitis diagnosis comprised antibiotics, the rate of injectable antibiotics in total cost was 3.62% (13.169.867 TL).

Antibiotics constituted 34.5% (13.104.971 boxes) of general drug box number which was 37.987.478 and injectable antibiotics constituted 6.79% (2.578.471 boxes).

When antibiotic distributions were assessed as regards their frequency to be prescribed for acute tonsillopharyngitis, amoxicillin-clavulanate (42.98%), cefuroxime (8.65%) and cefdinir (6.85%) were in the first place. In terms of economic data, it was understood that the highest cost in prescription cost distribution belonged to amoxicillin-clavulanate (29.61% of total antibiotic cost), which was followed by cefinir (18.73%) and cefuroxime (14.96%).

When the distribution of general drugs in prescriptions with single diagnosis was assessed, amoxicillin-clavulanate ranked second with 13.37% and cefuroxime ranked eighth with 2.69% among the first ten drugs (Table 1).

Table 1. Most frequently prescribed drugs by family physicians in Turkey in 2012

Rank among all prescribed products	ATC 5 code	ATC 5 name	Number of products in the prescription	Percentage of being prescribed
1	R05X	Other drugs for the common cold	7.692.348	22.01%
2	J01CR02	Amoxicillin-Clavulanate	4.671.135	13.37%
3	N02BE01	Paracetamol	2.493.602	7.13%
4	A01AD02	Benzydamine	1.958.519	5.6%
5	M01AE01	İbuprofen	1.866.333	5.34%
6	R05CB01	Acetylcysteine	1.366.163	3.91%
7	R05DB13	Butamirate	1.110.700	3.18%
8	J01DC02	Cefuroxime	939.702	2.69%
9	R05DB27	Levodropropizine	845.071	2.42%
10	R05DB07	Oxolamine	773.277	2.21%

Discussion

Acute tonsillopharyngitis is one of the most frequently observed reasons of referral to a doctor in all age groups, particularly in childhood(1). Sore throat and dysphagia are the most commonly encountered complaints during the course of upper respiratory tract infections. The presence of pharynx and tonsil hyperemia and/or exudation with these complaints leads to the consideration of tonsillopharyngitis diagnosis. Microbiological agents causing tonsillopharyngitis are viral agents depending upon age groups. The only condition where antimicrobial treatment is indicated is streptococcal tonsillopharyngitis caused by group A beta hemolytic streptococcus. In fact, the aim in treatment in the clinical picture of tonsillopharyngitis caused by this agent is to prevent acute rheumatoid fever, one of the nonsuppurative complications (3-7). Being the most frequently observed bacterial pathogen causing acute tonsillitis, Group A streptococcus is responsible for 15-30% of all cases in childhood and 5-10% in adulthood and is the only clinical picture where antimicrobial treatment is definitely indicated (Table 2). When the prescriptions of family physicians were evaluated in this study, it was realized that a single acute tonsillopharyngitis diagnosis was established in nearly 12% (exact rate: 11.86%) of all prescriptions. When not only the size of prescriptions with single diagnosis but also the size of prescriptions with more than one diagnosis including tonsillopharyngitis which were excluded from this study is taken into consideration, it would not be wrong to state that tonsillopharyngitis is one of the most frequent reason of referral to primary care and the most frequent cause of prescriptions.

The aim of treatment in Group A beta-hemolytic streptococcus tonsillitis is the prevention of suppurative and non-suppurative complications, the amelioration of clinical

complaints, the provision of hasty return to school, kindergarten or work, and the prevention of transmission of the disease to persons in close contact. Antibiotics in the penicillin group is the first option in treatment. Penicillin resistance has not still been detected in Group A beta-hemolytic *Streptococcus*. The commencement of penicillin treatment within nine days after the start of symptoms prevents the development of acute rheumatoid fever. In this respect, while antibiotics should be used in 25-30% cases of tonsillopharyngitis in children and in less than 5% in adults, it is seen that the percentage of antibiotic prescription in our country is quite high. When the prescriptions of family physicians were evaluated, it was confirmed that antibiotics were included in about 80% of prescriptions with single diagnosis of tonsillopharyngitis and it was assessed

Table 2. Tonsillitis agent and age variations

Agent	Prevalans (%)	
	In children	In adults
Bakterial	30-40	5-10
GABHS	28-40	5-9
Grup C, G, or F streptococci	0-3	0-18
<i>N. gonorrhoeae</i>	0-0.01	0-0.01
<i>A. haemolyticum</i>	0-0.05	0-10
<i>M. pneumoniae</i>	0-3	0-10
<i>C. pneumoniae</i>	0-3	0-9
Viral	15-40	30-60
Idiopathic	20-55	30-65

as a mark of presence of inappropriate use in the majority of prescriptions written in primary care.

Primary preference in treatment is oral penicillin or amoxicillin. The recommendation of parenteral antimicrobial agent use is limited only to benzathine penicillin G (IM) and is opted to oral treatment if the patient will not tolerate or cannot adjust to oral treatment (1).

Patients allergic to penicillin may also be allergic to cephalosporin at a rate of 10% (8). If the allergy in these patients is not in the form of anaphylaxis, cephalosporin can be preferred (3-8). However, macrolides can be used in the possibility of anaphylaxis. Macrolide resistance in Group A beta-hemolytic streptococci is around 5%. Therefore, macrolides should not be the first choice.

While the use of beta-lactamase inhibitor is not needed due to the fact that there is no resistance to penicillin in Group A beta-hemolytic streptococci or that beta-lactamase productions have not been detected, amoxicillin-clavulanate preference in the prescriptions of family physicians can be commented as an example of inappropriate use. When compared to amoxicillin, amoxicillin-clavulanate should not be used for acute tonsillopharyngitis due to excess side effects and unnecessary wide-spectrum (1,3-7).

Other antibiotics that can be used if penicillin allergy is not in the form of anaphylaxis include loracarbef, cefaclor, cefprozil, cefuroxime, axetil, ceftibuten, cefdinir, and cefpodoxime proxetil. Higher clinical and bacteriological eradication is ensured with oral cephalosporin in comparison to penicillin in acute streptococcal pharyngitis. However, its clinical significance has not been indicated (8).

Unreasonable antibiotic prescriptions and their use lead to the universal health problem, that is antibiotic resistance, which complicates treatment success of bacterial infections and gives rise to the inappropriate use of resources allocated for health. As in this study, the evaluation of the content of physicians' prescriptions may determine the state of antibiotic use and contribute to the necessary regulations and effective initiatives to be put forth in order to eliminate problems of unreasonable use. This study examining antibiotic prescriptions of all family physicians in all provinces of Turkey is significant in regard to its scope and to the fact that data belonging to the whole country has been put forth for the first time by excluding periodic differences. On the other hand, the evaluation of antibiotic use through prescriptions with frequently encountered acute tonsillopharyngitis is of vital importance in respect to minimizing probable disarray that multiple diagnoses could cause.

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