

# Acute Tonsillopharyngitis in a Family Practice in Mostar, Bosnia and Herzegovina

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## ABSTRACT

*The aim of this study was to examine the characteristics of acute tonsillopharyngitis diagnosis and treatment in the family care physicians in Mostar, Bosnia and Herzegovina. All patients diagnosed with acute tonsillopharyngitis in the Center of Family Medicine in Mostar in 2005 and 2006 were included in this study. Data were collected from medical records, including age and sex, month in which they visited their physician, symptoms and signs that they had (McIsaac's clinical score was calculated accordingly) and treatment. Results showed that there were no gender differences regarding diagnosis. Mean age was  $32.6 \pm 16.9$  years. The most patients were recorded during the January-March period. Total of 65.6% patients received antibiotic treatment. Phenoxymethylpenicillin, considered as the recommended antibiotic was used in 46.3% cases only. In conclusion, this first critical assessment of the existing family practice records on treating patients with tonsillopharyngitis suggested that physicians have to be more critical when treating patients with this diagnosis and that the knowledge and treatment of patients with pharyngitis need to be continuously improved in general medical practice.*

**Key words:** pharyngitis, tonsillitis, family physicians, group A. *Streptococcus*, antibiotics, penicillins, Mostar, Bosnia and Herzegovina

## Introduction

Acute tonsillopharyngitis is defined as an infection of the pharynx and tonsils<sup>1</sup>. It is one of the most common diseases associated with family physicians visits. Due to its great prevalence and potential life-threatening complications, it is considered as one of the important infectious diseases in public health<sup>2</sup>. Although signs and symptoms of the disease are usually sufficient to make a diagnosis, it is often difficult to make a distinction between bacterial and viral etiology on clinical grounds alone<sup>3</sup>. Streptococcal infection is considered an appropriate indication for antibiotic therapy and only 10% to 20% of pharyngitis presentations in family practice are culture positive for group A  $\beta$ -hemolytic streptococcus (GABHS) whereas others are predominantly viral<sup>4-7</sup>. However, reports from various countries estimate that antibiotics are prescribed in 30% to 75% of visits. This suggests that antibiotics are prescribed more often than necessary<sup>8-11</sup>.

Appropriate diagnosis of tonsillopharyngitis consists of the epidemiologic setting, history, physical examination, rapid antigen tests and, in the case when the rapid antigen tests are negative, a throat culture (as the gold standard for diagnosing streptococcal infection) is used<sup>12</sup>. But, in routine work, physicians often diagnose the acute tonsillopharyngitis without any use of the laboratory tests. In order to facilitate the diagnostic process, scoring systems based on clinical symptoms and signs have been developed<sup>6,13</sup>. However, none of the existing schemes have been shown to reduce antibiotic prescribing in clinical practice<sup>13</sup>. The major problem is not associated with the choice of method, but the fact that physicians usually fail to follow any guideline<sup>14</sup>. One of these score methods was developed by Canadian physicians (McIsaac WJ et al.) in the Family Medicine Centre at Mount Sinai Hospital, Toronto, Canada<sup>13,15</sup>. This score method has exten-

ded practical use during routine work in general practice, as it is simple and it is also appropriate to children as well as to the adults<sup>13</sup>.

As treatment of acute tonsillopharyngitis includes symptomatic and etiologic (in this case only antibiotic) treatment<sup>1</sup>, penicillin is recommended as first-line antibiotic against GABHS. The penicillin of choice is phenoxymethylpenicillin or oral penicillin V for 10 days. A single intramuscular dose of benzathine penicillin G is the first alternative. For individuals who are allergic to penicillin, the drug of choice is erythromycin. Although penicillin V is the drug of choice for bacterial pharyngitis, physicians use it infrequently<sup>16</sup>. A study of Linder and Stafford showed that physicians prescribed no recommended antibiotics in 68% of visits and that use of no recommended, more expensive, broader-spectrum antibiotics is frequent<sup>11</sup>. A possible reason is poor compliance with the recommended 10-day courses<sup>16</sup>. The choice of amoxicillin or amoxicillin with clavulanic acid, which are active against most commonly occurring bacterial upper respiratory tract pathogens, may also reflect an uncertainty of the physicians about clinical diagnosis and the etiology of infection<sup>16</sup>.

The aim of this study was to examine the characteristics of acute tonsillopharyngitis diagnosis and treatment among the population in care of family physicians in Mostar, Bosnia and Herzegovina, where such information is lacking.

**Materials and Methods**

*Method and participants*

This study was based on the secondary data, obtained from the available medical records from the Center of Family Medicine in Mostar. The Center is a family medicine residency training site affiliated with the Mostar University School of Medicine, with gravitation of approximately 10 000 patients from Mostar city area. Patients are mostly adults and elderly, while children usually have their own pediatrician. The Center employs 4 medical teams that handle over 12 000 primary care visits annually.

Participants in this study were all patients with the diagnosis of acute tonsillopharyngitis from January 2005 to December 2006. The data was collected only from their medical records, without any contact with the patients. Several variables were collected and analyzed, including age and sex of patients, month in which they visited their physician, symptoms and signs that they had and according to them a clinical score was calculated, the clinical score was analyzed and antibiotics as drugs of choice were determined.

The clinical score method (McIsaac et al.) is based on scoring clinical signs and symptoms<sup>13</sup>. Four characteristics are associated with being more likely to have a throat culture positive for GABHS: a temperature greater than 38 °C, absence of cough, tonsillar swelling and tender anterior cervical adenopathy. Each of these four clinical

findings are assigned a score of 1 point. To adjust for age, children aged 3 to 14 years are assigned 1 point for their higher prevalence of GABHS infection, those aged 15 to 44 receive a score of 0, and those aged 45 or more receive a score of -1. If the score is +1 or less, neither a throat swab nor antibiotic therapy is recommended. If the score is +2 and +3, the recommendation is to obtain a throat swab but wait for culture results before deciding about antibiotic therapy, as in most cases the result would be negative. And if the score is +4 or more, culture is required and therapy with penicillin could be started immediately if the patient was in the early stage of the illness or was clinically unwell<sup>13</sup>.

*Statistical analysis*

All data were tested for normality of distribution with the Kolmogorov-Smirnov test. Data were represented as mean values and their standard errors. Chi-square test was used for categorical variables analysis, while Edwards test was used for seasonal pattern analysis. P values less than 0.05 were considered statistically significant. SPSS Version 13.0 for Windows (SPSS Inc., Chicago, IL, USA) and Microsoft Excel 11 (Microsoft Corporation, Redmond, WA, USA) were used in analysis.

**Results**

During 2005 and 2006, a total of 244 patients diagnosed with acute tonsillopharyngitis were included in the present study, 120 (49.2%) men and 124 (50.8%)

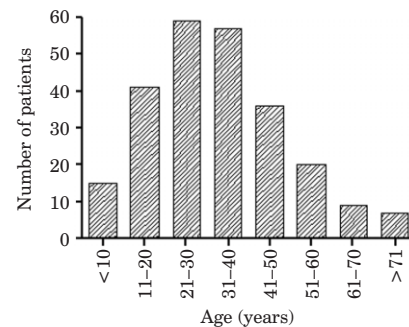


Fig. 1. Age distribution of patients with acute tonsillopharyngitis treated in the Center of Family Medicine in Mostar, 2005–2006.

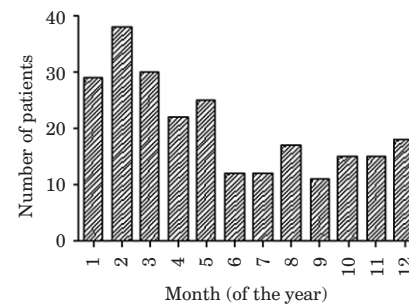


Fig. 2. Seasonal distribution of patient visit to the Center of Family Medicine in Mostar, 2005–2006.

women ( $\chi^2=0.066$ ;  $P=0.798$ ). Mean age was  $32.6 \pm 16.9$  years (Figure 1),  $31.8 \pm 17.1$  for men and  $33.4 \pm 16.7$  for women ( $t=0.714$ ;  $P=0.476$ ). The greatest number of patients was during the first three months of the year, that confirmed that pharyngitis was usually highly prevalent during the cold months of the year (Edwards  $P<0.0001$ , peak date February 26<sup>th</sup>, with 65.8% of amplitude variation) (Figure 2). Number of patients with a score of +1 was predominant while the number of patients with a score of -1 was the smallest ( $\chi^2=57.820$ ;  $P<0.001$ ). Table 1 shows the distribution of patients by clinical score value. Type of treatment was significantly different depending on the score value ( $\chi^2=57.978$ ;  $P<0.001$ ; Fisher's exact test) (Table 1). The most prescribed antibiotic was phenoxymethylpenicillin or penicillin V ( $\chi^2=275.875$ ;  $P<0.001$ ) in 46.3% cases (Table 2).

**TABLE 1**  
DISTRIBUTION OF PATIENTS WITH ACUTE TONSILLOPHARYNGITIS AND TREATMENT TYPE IN PATIENTS WITH ACUTE TONSILLOPHARYNGITIS TREATED WITH IN THE CENTER OF FAMILY MEDICINE IN MOSTAR, 2005 – 2006

McIsaac's clinical score value	Treatment type		No. (%) of patients
	Symptomatic No. (%)	Antibiotic No. (%)	
-1	3 (42.9%)	4 (57.1%)	7 (2.9)
0	31 (51.7%)	29 (48.3%)	60 (24.6)
+1	33 (48.5%)	35 (51.5%)	68 (27.9)
+2	16 (39.0%)	25 (61.0%)	41 (16.8)
+3	1 (2.8%)	35 (97.2%)	36 (14.8)
+4	0 (0.0%)	32 (100.0%)	32 (13.0)
Total	84 (34.4%)	160 (65.6%)	244 (100.0)

**TABLE 2**  
ANTIBIOTIC OF CHOICE IN ANTIBIOTIC TREATMENT OF PATIENTS TREATED IN THE CENTER OF FAMILY MEDICINE IN MOSTAR, 2005 – 2006

The first choice antibiotic	No. (%)
Phenoxymethylpenicillin (penicillin V)	74 (46.2)
Amoxicillin	27 (16.8)
Ampicilin	4 (2.5)
Amoxicillin and clavulanic acid	23 (14.3)
Cefalexin	10 (6.3)
Cefuroxime	2 (1.3)
Erythromycin	2 (1.3)
Azithromycin	4 (2.5)
Trimethoprim-sulfamethoxazole	6 (3.8)
Doxycycline	8 (5.0)
Total	160 (100.0)

## Discussion

The results of our study confirmed that acute tonsillopharyngitis was a very common infection among patients consulting their family physicians. There was no significant difference in age and sex among our patients regarding the diagnosis. Mean age was  $32.6 \pm 16.9$  years which showed that infection occurred most frequently in younger adults, although this diagnosis is commonly expected mostly in children and adolescents. This results could, however, be the consequence of the lacking information from the adolescent data, as family physicians usually do not provide medical care for them. Furthermore, based on the clinical score and the results of this study we can conclude that our physicians overdiagnose bacterial pharyngitis. Usually, 65.6% of pharyngitis cases are treated with antibiotic, which is in accordance with results of other studies<sup>8–11</sup> that confirmed great antibiotic abuse when treating this infection. Therefore, the conclusion is that physicians should differentiate bacterial and viral infections by using the clinical score method. The proportion of patients receiving initial antibiotic prescriptions should be reduced. Although phenoxymethylpenicillin (penicillin V) is the drug of choice for bacterial pharyngitis, physicians from this study used it insufficiently. It was most commonly prescribed antibiotic and was used in 46.3% cases. Therefore, physicians should be encouraged to prescribe antibiotics of first choice. Our results and conclusions are similar to those found in previous studies<sup>11,13,16</sup>.

Limitations of this study include already mentioned lack of school children. Also, family physicians often do not take a throat swab because of objective reasons and their diagnosis is based only on signs and symptoms. As a result we couldn't determine the real number of bacterial pharyngitis cases without a throat culture. A recent international study showed that clinical manifestation of pharyngitis may vary with the region and it is therefore critical that clinical decision rules for the treatment have the local validation<sup>17</sup>. The McIsaac scores are not the gold standard for prescribing antibiotics and this score has not been validated in patients from this region which are another limits of the study.

Based on the findings and limitations of this study, we can conclude that further research, especially among school children, validation of the score method with special remarks on the local population characteristics, and lastly, education of physicians on the importance, clinical symptoms and diagnosis of patients with acute tonsillopharyngitis are needed.

The first critical assessment of the existing family practice when treating patients with tonsillopharyngitis warned us to be more critical with this infection and that knowledge and treatment of patients with pharyngitis needs to be improved continuously in general practice in Mostar.

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## AKUTNI TONZILOFARINGITIS U OBITELJSKOJ MEDICINI U MOSTARU, BOSNA I HERCEGOVINA

### SAŽETAK

Cilj ove studije bio je ispitati osobitosti dijagnosticiranja i liječenja akutnog tonzilofaringitisa u obiteljskoj medicini u Mostaru, Bosna i Hercegovina. U studiju su bili uključeni svi pacijenti kojima je dijagnosticiran akutni tonzilofaringitis u Centru za obiteljsku medicinu u Mostaru tijekom 2005 i 2006 godine. Svi podaci su prikupljeni iz kartona pacijenata, a uključivali su: spol, dob, mjesec u kojem su se javili svom liječniku, simptome i znakove koje su pacijenti imali (na temelju čega je izračunata McIsaac-ova klinička metoda zbroja) i način liječenja. Rezultati su pokazali da nije bilo značajne razlike u spolu. Prosječna dob oboljelih je bila  $32,6 \pm 16,9$  god. Najviše oboljelih je bilo između siječnja i ožujka. 65,6% pacijenata je primilo antibiotik. Antibiotik prvog izbora, fenoksimetilpenicilin, bio je popisan u samo 46,3% slučajeva. Zaključno, naša prva kritička prosudba postojeće prakse u obiteljskoj medicini je pokazala da bi liječnici trebali kritičnije prilaziti ovom problemu te da znanje i liječenje pacijenata sa tonzilofaringitisom treba biti neprekidno poboljšavano.