

MANAGEMENT OF CLINICALLY CURED TONSILLOPHARYNGITIS IN PATIENTS WITH GROUP A STREPTOCOCCUS ISOLATED FROM A PHARYNGEAL SWAB

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The group A streptococcus (GAS) tonsillopharyngitis is a very common disease in children's age. Inappropriate use of antibiotics is frequently encountered, both for treatment purposes and for eradication of the causative agents.

The aim of our study was to discover reasons and causes for inappropriate use of antibiotics in children. We have used the triangulation approach to the problem which was studied by the analysis of interviews, observation of patient-cases and by the review of medical records. We discovered that prescribers had very different attitudes towards curing GAS tonsillopharyngitis as well as towards curing GAS carriage. The physicians were under the pressure to prescribe antibiotics and the parents were prone to administer antibiotics to children by themselves. Such behavior could be partially explained by the lack of funds for laboratory analyses. Moreover, the patients were still allowed to buy antibiotics without prescriptions. General culture of using antibiotics should be increased to a higher level among both health workers and parents in order to change some irrational behavior when managing patients who have been cured from streptococcal tonsillopharyngitis. *Acta Medica Medianae* 2015;54(4):46-51.

Key words: tonsillopharyngitis, carriage, antibiotics, children

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Routine post-therapy testing of these patients is not advised. Only those patients that suffered recurrent symptoms of tonsillopharyngitis within weeks or months of completing the therapy should be tested (1). Nevertheless, group A streptococcus can be found in healthy children younger than 2 years of age in about 2.3%. A few reasons for isolating group A streptococcus in otherwise healthy children are non-effective antibiotics, new infections or chronic GAS carriage with symptoms of a viral infection (5).

The prevalence of chronic GAS carriage in children of all ages is 12% (6). However, treatment with antibiotics is not indicated in patients with chronic GAS carriage (7). Antibiotics can only be administered in a few situations: when there is a community outbreak of rheumatic fever, in acute post-streptococcal glomerulonephritis or with the invasive GAS infection; when there is an outbreak of GAS infection in a closed community; when patients have a history of rheumatic fever episodes; when parents are anxious about the GAS infection or when tonsillectomy is being considered only because of carriage (8). If one decides to treat the GAS carriage under these circumstances, the drug of choice is clindamycin orally for 10 days, or intramuscularly administered benzathine penicillin plus 4 days of oral rifampicin therapy (9, 10). The pediatricians prescribe antibiotics inappropriately in 33.9% of cases and general physicians do the same in about 49% of all cases (11).

Introduction

Acute streptococcal tonsillopharyngitis is one of the most common illnesses in children (1). Group A streptococcus (GAS) causes tonsillopharyngitis in about 37% of children. Other causes of bacterial pharyngitis are rare. The diagnosis is relying on clinical symptoms and signs, as well as on a throat swab and the rapid antigen detection test (RADT) (2). Group A streptococcal tonsillopharyngitis can be treated with antibiotics successfully and the drug of choice is penicillin or amoxicillin. Clindamycin or clarithromycin are used to treat infections of penicillin-allergic individuals for 10 days, as well as azithromycin for 5 days (3, 4).

Unnecessary treatment with antibiotics can have a lot of adverse outcomes and the most common complication is the emergence of bacterial strains resistant to antibiotics. For instance, in the countries of Southern Europe, including Serbia, there is a significant correlation between the use of antibiotics and bacterial resistance to them compared to other regions (12). There are some variations between countries in treatment of GAS tonsillopharyngitis. Furthermore, pediatricians and general practitioners treat GAS tonsillopharyngitis differently and sometimes that difference is much higher than we know (13).

The aim of this study was to investigate the treatment of children that are still positive for GAS after a recovery from tonsillopharyngitis. We will investigate whether physicians follow the guidelines for the treatment of GAS tonsillopharyngitis and use antibiotics rationally, or treat these children inappropriately.

Material and Methods

This is a qualitative observational study with a narrative method of data collection (14). The study included interviews with six pediatricians and four parents of children that suffered from tonsillopharyngitis, as well as the observation of some patients with GAS tonsillopharyngitis in pediatricians' offices and their medical charts (15).

The research was conducted in a Community Health Center (CHC) in Kragujevac, Serbia.

Our study was approved by the Ethics Committee of CHC. The interviews were based on semi-structured, open-ended questions, so that parents and the doctors could explain their view on the problem of GAS carriage with as much details as possible. Each interview was recorded and then digital audio data were transcribed literally and analyzed as soon as possible after each interview (16). To theorize the key themes that the doctors and families reported, the analysis involved specific stages of interpretation: the definition of key topics, creating a directory of topics, analyzing the transcript to add data to the topics directory. The key topics were then advanced, collapsed or explained. The information here is the final narrative, produced as interpretation of facts as a whole (14).

The interviews with pediatricians were conducted in their offices. We asked ten pediatricians to participate in the study. Only six of them accepted participation, the others excused themselves due to the lack of time. The investigators spent a whole day with each doctor and observed some cases and medical charts of the children who suffered from GAS tonsillopharyngitis. Each interview lasted about 15-20 minutes. The pediatricians were told that our principle was not to audit practice, but to understand their feelings about these consultations and antibiotics treatment (17). Every doctor was asked to give information about children that suffered from tonsillopharyngitis during the last year. The chil-

dren included in the study had positive culture results to GAS after GAS tonsillopharyngitis was treated with antibiotics. The excluding criteria for the children were: tonsillopharyngitis caused by another microorganism; a child in closed community without the break of invasive GAS infection, rheumatic fever or acute post-streptococcal glomerulo-nephritis, and children who had episodes of rheumatic fever. After that, we randomly chose ten children, took their contact numbers, called and asked their parents to participate in our study, but only four of them accepted.

We interviewed parents (10-15 minutes) within one week after interviewing their pediatricians and these interviews were realized by phone. The parents were told that the reason of the interviews was to understand their opinion about the treatment of their children. The patients were asked about their experiences and views about their recent consultation and previous ones, expectations of the consultation, satisfaction, their attitude towards and knowledge about antibiotics and suggestions for reducing unnecessary prescribing of antibiotics (17).

Results

Interviews with doctors Basics about tonsillopharyngitis

All pediatricians agreed that tonsillopharyngitis was the most common illness in children. They said that about 30% of their patients had symptoms of tonsillopharyngitis and that these symptoms were the most frequent in schooldays, especially during autumn and spring. The pediatricians said that in most cases the cause of tonsillopharyngitis was a virus and out of bacteria, group A Streptococcus.

Only one doctor said: "It is strange why GAS tonsillopharyngitis is rare in summer, because a lot of streptococcus can be found in ice cream and milk. I think that is because children are on vacation, so they cannot see the doctor".

Diagnosis and treatment

There were different opinions about establishing the diagnosis of GAS tonsillopharyngitis. Some pediatricians said that they set diagnosis by clinical examination and when they were not sure about it, they performed some laboratory analyses and a throat swab, but these cases were rare. One said that she would like to do the analysis more frequently, but her superiors said to her and to her colleagues that those analyses were expensive and that they should manage it by themselves.

Only one pediatrician said: "Initially, I always perform the RADT test, sometimes a throat swab and then the laboratory analysis (complete blood count, leukocyte count, CRP) to be sure about the diagnosis". It is interesting that other pediatricians did not know about the RADT test.

The doctors had different opinions about the treatment of GAS tonsillopharyngitis. There were doctors that prescribed penicillin im and some of them said that all the time they prescribed phenoxymethylpenicillin or amoxicillin orally for ten days. One doctor said that she prescribed amoxicillin/clavulanic acid, but another one said that she had bad experience with this drug, and that all children who received amoxicillin/clavulanic acid had a relapse. All doctors agreed that they prescribed macrolides in cases of penicillin allergies. Only one said that she has been avoiding erythromycin since it has been toxic for children.

GAS Carriage

There were very different opinions about GAS carriage. All doctors said that if the patient with tonsillopharyngitis had been cured in ten days after the beginning of the therapy, the child rarely came back for a control examination. Two doctors said that if the child suffering from GAS tonsillopharyngitis came back after the treatment with the symptoms of the disease, then they performed the analysis again and prescribed one dose of benzathine benzylpenicillin every 3 weeks for about four months. If the child had no symptoms after the treatment, three doctors said that they performed no analysis again and only one pediatrician said that she performed the analysis again in all cases.

One pediatrician said: "When the throat swab is positive to GAS, I always prescribe antibiotics. I do not tolerate GAS in a throat swab, and therefore I prescribe penicillin".

Another doctor said: "I always cure children with a positive throat swab to GAS and when parents are also carriers, I cure them too for two days with amoxicillin".

Doctors are under pressure for prescribing antibiotics

All pediatricians agreed that they were under more or less pressure by parents to prescribe antibiotics. They thought that, in most cases, the parents with better social and financial status were the most difficult for cooperation. One pediatrician told me that parents with higher education were often arrogant and that parents usually thought that they knew everything.

One doctor said: "Some parents are so offensive and when I refuse to prescribe antibiotics, they go to the Emergency service for the weekend and there they get the antibiotics". Another doctor said: "I think the problem is the existence of a chosen doctor, so the doctor must manage patients. Otherwise, he would have fewer patients and then fewer financial points and in both ways, it is not good". Two pediatricians told me that they did not have a lot of problems with parents because they thought that it was all about the doctor-patient relationship and about trust.

One doctor said that she did not prescribe antibiotics when tonsillopharyngitis was not caused by bacteria. However there was a situation when parents said: "Okay, but you know, last time when my child had a sore throat and temperature, she got bronchitis". The doctor said that in that situation she had to prescribe antibiotics or she would have been in a trouble because of parents.

Unjustified usage of antibiotics

All doctors said that there had been a lot of cases of unjustified usage of antibiotics in the treatment of children. They said that the problem was in the availability of antibiotics on the free market.

One doctor said: "I know that the sale of antibiotics without a prescription is prohibited, but it is a public secret that there is a pharmacy in the city that sells antibiotics without prescriptions. Probably the manager of the pharmacy has some connections with important people". She also said: "I think that the problem is in the manner of prescribing antibiotics. The antibiotics should be prescribed by pieces and not by packages, because there are always unused tablets, and later these tablets are administered to the children without consultation with the doctor".

Some doctors thought that more medical staff is necessary. They said that frequently, there were too many patients, and that physicians did not have enough time to talk with all of them. In most cases, the easiest way was just to prescribe whatever they were asked.

Some pediatricians said that in our country, there were fewer vaccinations of children against streptococcus and staphylococcus than necessary. Therefore, they prescribed antibiotics even if they were not sure about the cause of tonsillopharyngitis and they did not dare not to prescribe antibiotics.

Observation

We spent some time with each interviewed doctor. We observed some cases of children with a sore throat and there were some interesting ones. One such case was a woman with a 7-year-old boy, who said that the boy had a sore throat and cough.

So the boy's mother said: "You know, he started to cough yesterday, so I gave him Ciprocinal". Pediatrician said: "But why, don't you know that the administration of Ciprocinal is forbidden in that age?" Mother said: "Oh, no! I made a mistake. I did not administer him that" and the boy then said: "But mom, you gave it to me yesterday, remember?"

We were also in another doctor's office when a 15-year-old boy came and said that he had the temperature 37.2°C and a sore throat. After a clinical examination, the physician said that he would not do any analyses, then prescribed amo-

xicillin for five days and said that if the boy did not feel better after that, then he should come back to

the doctor's office.

We also observed medical charts of children, from 6-18 years of age, from each doctor's office. We noticed that antibiotics had been prescribed frequently and that only about every 7th child had the results of the laboratory analysis and only about every 10th child had swab throat results. The most frequent antibiotics prescribed for tonsillopharyngitis were phenoxymethylpenicillin, amoxicillin, amoxicillin/clavulanic acid. Prescribing Penicillin was rare.

Interviews with parents

We attempted to communicate with the children that were GAS carriers, but that was very difficult mainly because pediatricians rarely performed a throat swab and the RADT test. Only one doctor performed those often, but she was not in the mood for giving us the information about these children, so we called parents of the children whose phone numbers were obtained from other physicians. We spoke for about ten minutes by phone with each parent. The parents mainly said that they were not satisfied with the treatment of their children. The parents thought that the physicians should perform analyses more often, so therefore they gave antibiotics to the children by themselves from time to time. One mother said: "I am not satisfied with the treatment of my child. Whenever my daughter suffered from tonsillopharyngitis, doctors prescribed her antibiotics which they wanted, without testing resistance. Therefore, I took my child to the Institute of Public Health to have the throat swab of my child analyzed and to have her therapy changed. My therapy was better than the doctor's!"

Some parents also said that they think that the analysis for GAS carriage in schools should be performed more frequently, because the children suffering from asymptomatic GAS carriage were the main source of the infection.

Discussion

From our results, we noticed that GAS tonsillopharyngitis was the most frequent illness among children in Kragujevac. Also, we concluded that physicians set the diagnosis generally by a clinical examination and only one doctor said that she performed the analysis and the RADT test. Diagnosing GAS tonsillopharyngitis without a laboratory analysis, a throat swab and the RADT test in some cases might prove ineffective, prolong disease and raise costs of treatment (8). Some pediatricians said that they always cured GAS carriage even when a child had no symptoms. That was also very delicate, because we knew that those children should never be treated except in a few situations (8). Additionally, parents' expectations and pressure for prescribing antibiotics were large problems in clinical practice. The physicians

frequently did not know what to do, because if they did not satisfy patients, they could have lost patients and that would decrease their own salary. These are arguments against the concept of a chosen doctor.

In Serbia, over-prescribing of antibiotics and resistance of bacteria to antibiotics are more frequent than in other European countries. Especially, macrolides were the category of antibiotics prescribed more in Serbia than in other European countries (12, 18). The physicians thought that one of the reasons for this was the availability of antibiotics to anyone in pharmacies and the possibility to buy antibiotics without a prescription in some cases. Also, they thought that antibiotics should be prescribed by pieces and not by packages. Those problems should be solved with pharmacists. Moreover, one doctor thought that in our country, children have not been vaccinated against the enough number of diseases compared to other countries, so again, we came back to the problem with insufficient funds.

There was one case when a mother administered ciprofloxacin to her son. That was a mistake because Ciprofloxacin should not be administered to children (8). Consequently, we again came back to the problem of availability of antibiotics to patients. Also, we noticed that one physician prescribed amoxicillin for five days to one patient with a high temperature and a sore throat. That was also arguably appropriate, because the effect could not be expected after less than ten days of amoxicillin administration. It is better not to give antibiotics at all, than to prescribe them for five days. The consequences of such behavior are increased antibiotic resistance (3).

From the interviews with parents, we observed that they sometimes were not satisfied with the treatment. One parent thought that the analysis should be performed more frequently and occasionally she did a throat swab of her child by herself and furthermore changed the child's therapy depending on the results. That lack of parents' satisfaction with the manner of treatment appeared probable because physicians did not talk enough with their patients. The shortage of communication between doctors on the one hand, and patients on the other, might be related to the increased number of patients compared to the number of doctors and the lack of time in general or some other reasons. According to the standard by the Serbian Ministry of Health, there should be at least one pediatrician to 850 preschool children and one pediatrician to 1500 school children. Now in Primary Health Care in Kragujevac in Service for Preschool Children Health Care there are 16 pediatricians, and 13 pediatricians work in Service for School Children Health Care. The limitation of our study was the fact that we could not interview all pediatricians in Primary Health Care. Also, we could not get in touch with all the children with GAS tonsillopharyngitis, so all this information was

based on the assumption that the opinion of people we interviewed could correspond to the opinions of other people that we could not reach.

Conclusion

We noticed that there was a problem with insufficient funds in Primary Health Care for laboratory analyses, for more medical staff and for

more vaccination in children. Besides, the controls of the pharmacies for the antibiotic prescription should be performed more frequently, because some of the pharmacies still sell antibiotics without prescriptions. We also think that people, in general, should be more educated about anti-biotics, in order not to administer them to their children without consultation with physicians.

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TRETMAN KLINIČKI IZLEČENIH BOLESNIKA OD TONZILOFARINGITISA SA STREPTOKOKOM GRUPE A IZOLOVANIM IZ BRISA GRLA

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Tonzilofaringitis izazvan streptokokom grupe A (the group A streptococcus, GAS) je veoma česta bolest kod dece. Neopravdana upotreba antibiotika je česta, kako za lečenje samih simptoma tako i za lečenje zdravih kliconoša. Cilj naše studije bio je da otkrijemo razloge neopravdane upotrebe antibiotika kod tonzilofaringitisa izazvanim streptokokom grupe A. Studiju smo sprovedi kroz intervju sa specijalistima pedijatrije i roditeljima dece lečene od tonzilofaringitisa, opservacijom nekoliko slučajeva u samim ordinacijama kao i pregledom medicinske dokumentacije. Otkrili smo da lekari imaju različit pristup u lečenju samog tonzilofaringitisa, kao i u lečenju kliconoštva. Lekari su pod pritiskom od strane roditelja da propišu antibiotike, a i roditelji su skloni da daju deci antibiotike bez konsultacije lekara. Takvo ponašanje se može delimično objasniti nedostatkom sredstava za laboratorijske analize. Takođe, bolesnici mogu još uvek da kupe antibiotik bez lekarskog recepta. Potrebno je kulturu propisivanja i uzimanja antibiotika kod lekara i bolesnika podići na viši nivo. *Acta Medica Medianae 2015;54(4):46-51*

Ključne reči: tonzilofaringitis, kliconoštvo, antibiotici, deca

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