

Is the Abuse of Antibiotics Change the Sensitivity Of follicular tonsillitis Bacteria in Wasit province?

هل سوء استخدام المضادات الحيوية يغير من حساسية البكتريا المسببة لالتهابات اللوزتين والبلعوم؟

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Abstract:

Group A *Streptococcus* is the most important causative agent of tonsillopharngitis.Penciline (Ampiciline) is drug of choice in patients with tonsillopharngitis.The aim of this study was to detection of the type of Bacteria in a patients with acute / recurrent acute pharyngo- tonsillitis ,Decided whether the abuse of the Antibiotics by the population, modulating the type of bacteria & it's susceptibility to Antibiotics .This prospective study conduct in Al-karama teaching hospital in wasit province. Throat culture and Antimicrobial susceptibility test was done to all patients.

In this study its found that 160 out of the 200 patients, used antibiotics for few days (2-3 days) until the patient felling better, while only 40 patients used antibiotics for 5 days & more according to the doctors prescription, According to the type of antibiotic used: 120 patients used (Ampicillin or penicillin or cloxciellin), 40 patient used (Amoxicillin), 40 patients used other antibiotics. From a 200 patients enrolled in this study ,Group A Beta-Hemolytic *Streptococcus* Bacteria (GABHS) was isolated from throat swabs in (120 male & 58 female patients) while Group A Beta-Hemolytic *Streptococcus* Bacteria was not isolated in(14 male & 8 female patients)and According to the sensitivity test, it's found that 168(94%) patients were resistance to penicillin while 10 (6%) were sensitive to penicillin ; 152 (85%)patients were sensitive to Amoxicillin while only 26 (15%) were resistance ; 150 (84%) patients were sensitive to ciprofloxacin while 28 (16%) patients were resistance ; 170 (95%) patients were sensitive to cefotraxon while 8 (5%) were resistance.

الخلاصة

تعد المكورات المسببة من المجموعة أ هي المسبب الرئيسي لالتهاب اللوزتين والبلعوم ويعد البنسلين (الامبسلين) هو العلاج المفضل لمرضى التهاب اللوزتين والبلعوم.

الهدف من الدراسة هو تحديد نوع البكتريا المسببة لالتهاب اللوزتين والبلعوم والملاحظة في ما إذا سوء استخدام المضادات الحيوية في المجتمع تأثير على تغير نوع البكتريا وقاومتها للمضادات الحيوية.

هذه الدراسة الافتراضية أجريت في مستشفى الكرامة التعليمي في محافظة واسط.الزر وعات لمسحة

البلعوم واختبار الحساسية للمضادات الحيوية أجريت لجميع المرضى وكانت النتائج في هذه الدراسة هي

160 مريض من أصل 200 مريض كانوا يستخدمون المضادات الحيوية لمدة يومين إلى ثلاثة أيام أو أقل حتى الشعور بالتحسن بينما 40 منهم استخدموا المضادات الحيوية لمدة خمسة أيام أو أكثر وحسب

الاستشارة الطبية.وحسب نوع المضاد الحيوي 120 مريض كانوا يستخدمون البنسلين أو الامبسلين

والكلوكساسلين بينما 40 منهم استخدموا الاموكسلين و 40 الآخرين استخدموا أنواع أخرى من

المضادات الحيوية. من ال200 مريض المشتركين في هذه الدراسة تم عزل المكورات المسببة نوع أ

بيتا هيمولتك من 120 رجل و58 امرأة بينما لم تعزل في 14 رجل و8 امرأة وحسب اختبار الحساسية

للمضادات الحيوية كانت النتائج 168 (94%) مقاومة للبنسلين بينما فقط 10 (6%) كانت حساسة

له ، 152 (85%) كانت حساسة للاموكسلين بينما 26 (6%) كانت مقاومة للاموكسلين، 150 (84%)

مريض كانوا حساسين للسبروفلوكساسلين بينما 28(16) كانوا مقاومين له ، 170 (95%) مريض كانوا

حساسين للسيفوترايكون بينما 8(5%) كانوا مقاومين له

Antibiotics are wonderful. But if you don't take a full dose, the bacteria develop a resistance to that drug and drugs of the same class. If you stop your antibiotic halfway through, as the antibiotic drops below the killing dose, then the bacteria that survive can develop resistance. The worst is taking one or two pills and stopping. Then will the remaining bacteria can become resistant. [Murray Grossan, 2009]

Most antibiotic prescribing is in primary care, and most of it is for respiratory tract infections.[Standing Medical Advisory Committee,1998] Clinical guidelines advise against the routine use of antibiotics in patients with upper respiratory tract infection, sore throat, and otitis media.[I Petersen, A M Johnson, 2007] But Overuse of a drug still a major factor. When a patient is seen, it only takes 5 minutes to write a prescription. But it may take 1/2 hour or longer for the doctor to try to convince the patient not to take an antibiotic and even then he may fail. Many doctors give up and write the prescription, even though it's not going to help. [Murray Grossan, 2009]

Sore throat caused by group A beta-hemolytic streptococcus is one of the most common diseases during adolescence and early adulthood which makes a lot of problems and consumes a great budget for its treatment and complications, all over the world. [Krobber, M.S, 1985, Hashemkhani, 1995; Gouthreir, M, 1996; Kell, S.B. and L. Dick, 2000]

The presence of GABHS pharyngotonsillitis may be suspected on the basis of clinical findings, and the diagnosis should be confirmed by laboratory testing.GABHS infections usually occur in children aged 5 to 15 years during the winter and early spring in temperate climates. Symptoms frequently include acute throat pain, severe pain on swallowing, and fever, but headache, nausea, vomiting, and abdominal pain may also be present, especially in younger

children. Clinical examination shows tonsillopharyngeal erythema, sometimes with exudates, and tender, enlarged anterior cervical lymph nodes (lymphadenitis). Other findings may also be present, including a scarlatiniform rash and palatal petechiae. Unfortunately, these signs and symptoms are not specific for GABHS pharyngotonsillitis and consequently are not sufficient for making an accurate diagnosis. On the other hand, a viral rather than a bacterial etiology is strongly suggested by the absence of fever or by the presence of certain clinical features, such as conjunctivitis, cough, hoarseness, coryza, anterior stomatitis, discrete ulcerative lesions, viral exanthem, and diarrhea.[Brook,et al, 2006]

For almost five decades, penicillin has been the drug of choice for the treatment of streptococcal pharyngitis. This antibiotic has proven efficacy and safety, a narrow spectrum of activity and low cost. [Bass JW, 1986]

Of commonly used antibiotics for the treatment of beta-hemolytic streptococcus infection are penicillin and its family (including ampicillin).

As proper usage of antibiotics leads to rapid treatment of streptococcal infection, inadequate treatment and changing in bacterial characteristics leads to bacterial resistance to antibiotics. This results in unsuccessful treatment and increased complications. [Pechechero, M.E., J.R. Casey, T. Mayes and et al., 2000; Brink, W.R. and F.W. Denny, 2001]

The drug resistance is different from one city to the next even in the same state. A drug that is effective in Detroit may be ineffective against the same bug in Chicago. This is why doctors must take cultures to see which drug if any work. [Murray Grossan, 2009]

Aims:

1. Detection of the type of bacteria in a patients with acute / recurrent acute pharyngo tonsillitis
- 2- Decided whether the abuse of the Antibiotics by the population, modulating the type of bacteria & it's susceptibility to Antibiotics.

Material and Method:

This study included 200 patients who attended al_Karama general hospital wasit province \ENT Department from January 2009 – May 2009 complained from sore throat & diagnosed cases of acute\ recurrent acute pharyngotonsilitis.

After full ENT History & exam in addition to special History questioner forma designed by the researchers concentrated about the duration & type of Antibiotic used before.

Throat swabs were taken separately for culture & sensitivity test. the patients received wide spectrum antibiotic (amoxicillin+ clavulanic acid) until we received the result of the sensitivity test .

“Base blood agar” culture media was used to distinguish and separate group A beta hemolytic *Streptococcus*. Media were stored in refrigerator and used in a maximum of one week length.

To separate *Staphylococcus aureus* from group A beta hemolytic *Streptococcus*, “manitol salt agar” media was applied. After the culture process was performed, plated were placed in a 37°C incubator within a jar which contained 10%Co2, for 24-48 hours.

To recognize group A beta-hemolytic *Streptococcus*, solitary colonies were assessed by means of focused light. Small colonies with a bright circle around, which mean hemolysis, were selected and gram-staining was performed. Catalase test was done to distinguish *Streptococcus* from *Staphylococcus*. Bacteria which had a

negative catalase test were assessed by sensitivity test using bacitracin and incubated in a jar for 24 hours in 37° C. After this period of time, any bacteria which showed sensitivity to bacitracin and had a bright circle around was mentioned as group A beta-hemolytic *Streptococcus* [Harods, C.S., 1990; Centor, R.M. and G.E. Rvoff, 1997; Redetsky, M. and R.C. Wheeler, 1999; Henry, J.B, 2001; Odimara, S., M.W. Luc-Louis, et all, 2003;]. After diagnosis of group A beta-hemolytic *Streptococcus* was made, antibiogram test was done using, ciprofloxacin, cefotriaxone, tetracycline, ampicillin, amoxicillin, and penicillin. Diameter of the bright circle around antibiotic disk was measured by a ruler and according to the standard table (bioanalyse sensitive discs company); bacteria were classified as sensitive, semi- sensitive and resistant.

We used SPSS as statistical program.

Results:

In this study it was found that 160 out of the 200 patients ,used antibiotics for few days (2-3 days) until the patient felling better, while only 40 patients used antibiotics for 5 days & more according to the doctors prescription . As shown in Table (1)

Table No. (1): the duration of using penicillin antibiotics.

Duration(days)	2-3 days	4-5 days and more
No. of patients	160 (80%)	40 (20%)

According to the type of antibiotic used: 120 patients used (Ampcillin or penicillin or cloxcicillin), 40 patient used (Amoxicillin), 40 patients used other antibiotics, as shown in Table (2)

Table No. (2): the types of antibiotics used by the patients.

Type of antibiotic	Ampicillin or penicillin or cloxacillin	Amoxicillin	Other antibiotics
No. of patients	120 (60%)	40 (20%)	40 (20%)

From a 200 patients enrolled in this study, Group A Beta-Hemolytic *Streptococcus* Bacteria (GABHS) was isolated from throat swabs in (120 male & 58 female patients) while Group A Beta-Hemolytic *Streptococcus* Bacteria was not isolated in (14 male & 8 female patients) as in table (3).

Table No. (3) The results of throat swab cultures.

	Positive culture for(GABHS)	Negative culture for (GABHS)
male	120	14
female	58	8
total	178 (89%)	22 (11%)

According to the sensitivity test, it's found that 168(94%) patients were resistance to penicillin while 10 (6%) were sensitive to penicillin; 152 (85%) patients were sensitive to Amoxicillin while only 26 (15%) were resistance; 150 (84%) patients were sensitive to ciprofloxacin while 28 (16%) patients were resistance; 170 (95%) patients were sensitive to cefotriaxion while 8 (5%) were resistance, as shown in the table(4).

Table No. (4) : the results of sensitivity tests

	penicillin	Amoxicillin	ciprofloxacin	cefotriaxion
sensitive	10 (6%)	152 (85%)	150 (84%)	170 (95%)

Resistant	168 (94%)	26 (15%)	28 (16%)	8 (5%)
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Discussion:

In this study it's found that 80% (160 patients) used antibiotics for 2-3 days until they feeling better, while only 20% (40 patients) used antibiotics for 5 days & more according to the doctors prescription & this reflect the high percentage of antibiotic abuse (P-value ≤ 0.005) by the patients in our province.

According to the type of antibiotic used: 120 patients used (Ampicillin or penicillin or cloxacillin), 40 patients used (Amoxicillin), 40 patients used other antibiotics, so the most common antibiotic used by the patients without doctors prescription, was the penicillin in 120 patients (60%) in our province.

GABHS Bacteria are the most common cause of bacterial tonsillitis and are spread via respiratory secretion through close contact [Scott-Brown's, 2008]; Throat culture remains the gold standard for the diagnosis of streptococcal pharyngitis. Under ideal conditions, the sensitivity of throat culture for group A beta-hemolytic *Streptococci* is 90 percent; in office settings, the sensitivity ranges from 29 to 90 percent [Brook, Itzhak; Dohar, Joseph E, 2006]. In our study 89% of the isolated microorganism from throat swab were GABHS bacteria while 11% was Negative culture for (GABHS), these results differ from other studies whose found 28.5% [Fateme Nabipour and Mohammadali Tayarzadeh, 2005], and other study which reported 6% and 34.4% were GABHS bacteria [Betrix, C., J. Romario, 1994; Gonzales-Lama, Z., J.J. Gonzalez et

all, 2000] and 21.3% were GABHS [Roya Ghasemian, Narges Najafi and M. Reza Shariatzadeh, 2007].

In our study :According to the sensitivity test, it's found that 168(94%) patients were resistant to penicillin while 10 (6%) were sensitive to penicillin ; 152 (85%) patients were sensitive to Amoxicillin while only 26 (15%) were resistance ; 150 (84%) patients were sensitive to ciprofloxacin while 28 (16%) patients were resistance ; 170 (95%) patients were sensitive to cefotraxion while 8 (5%) were resistance. So the GABHS bacteria isolated in our province were a highly resistance to penicillin(p-value ≤ 0.002) which is highly significant statistically & this result goes with the result of [Fateme Nabipour and Mohammadali Tayarzadeh, 2005] who found that all strains of GABHS bacteria in Kerman , Iran were resistance to penicillin but its disagreed with result of [Navaneeth, B.V., N. Ray, S. Chawola and et al., 2001] in India were all GABHS bacteria sensitive to penicillin , also disagreed with [Kamali, A., M. Daneshy and M.R Kheirkhan, 2001] all 44 isolated GABHS bacteria were sensitive to penicillin.

Conclusion:

1. Many patients used antibiotic for 2-3 days only, which might be the cause for development of antibiotic resistance.
2. Most common antibiotic used by patients for tonsillitis treatment was penicillin, which might render this drug is ineffective against Group A beta hemolytic *Streptococcus*.
3. Most common microorganism causing follicular tonsillitis in our province (Wassit) was Group A beta hemolytic *Streptococcus*.

Suggestions:

1. Encourage your friends to accept a doctor's recommendation for non - antibiotic treatment. Discourage them from insisting on antibiotics for each sniffle.
2. it is necessary to do a culture & sensitivity test before the usage of any antibiotics
3. Creation of a special comity that can achieve the monthly report for the favorite antibiotic according to the culture & sensitivity for the most common infections in their locality.

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