

The Spectrum of Aetiological Agents and Response to Treatment with Oral Cloxacillin in Acute Tonsillitis

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Article received: 11th January, 2022

Article accepted: 28th February, 2022

ABSTRACT

Introduction: Acute tonsillitis is a common problem in patients who present to the Ear, Nose, Throat Out Patient Department (ENT OPD). Children and young adults are commonly affected. Antibiotics are generally prescribed in such patients empirically. This study aims to find out the common agents causing acute tonsillitis and clinical response to oral Cloxacillin.

Materials and methods: This is a cross sectional observational study conducted from July 2018 to June 2019 in the Department of ENT, Pokhara Academy of Health Sciences, Pokhara. Throat swab was sent for culture and patients were prescribed oral Cloxacillin. Patients were analyzed after culture sensitivity reports for improvement of their symptoms on 5th to 6th day of treatment. McIsaac score less than 3 was considered as treated and score >3 considered untreated.

Results: Acute tonsillitis was the most frequent in age group 21-30 years and group A Beta hemolytic streptococcus was the most common isolate. Cloxacillin is found to be effective in the treatment of acute bacterial tonsillitis.

Conclusion: This study suggests that oral Cloxacillin is effective in treatment of acute tonsillitis & the most common organism isolated was B Hemolytic streptococcus.

Keywords: Tonsillitis; cloxacillin; bacterial

INTRODUCTION

Tonsillitis is inflammation of the tonsils, most commonly caused by bacterial or viral infection. It is one of the most common problems encountered by otorhinolaryngologists in the pediatric and adult population.¹This condition is responsible for more than 6 million physician office visits annually by children in 5-15 years of age.²The majority of serious cases of acute tonsillitis are found to be of bacterial origin. Group A beta-hemolytic streptococci are the most common causative agent that includes 5 to 80% of tonsillar infections. Other bacterial agents are Hemophilus influenza, Mycoplasma

pneumonia, Neisseria meningitis, etc., which is less common.³Antibiotic prescription pattern differs from country to country, or even from region to region, which is attributable to various factors such as the infecting organisms and antimicrobial susceptibility, physician preference, and costs⁴. Especially in recent years, the presence of the beta-lactamase producing bacteria such as Staphylococcus aureus and Hemophilus influenzae in tonsils microbiota can promote penicillin resistance. Several researchers have claimed that failure of antibiotic therapy



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may be due to the underestimation of resistant microorganisms, which could also be explained by low concentration of antibiotics in the tonsillar tissue, potentially combined with the presence of resident bacteria producing protective enzymes, or specific antibiotic resistance patterns of the involved pathogenic bacteria.⁵ Treatment of acute tonsillitis include penicillin, penicillin congeners (ampicillin or amoxicillin), clindamycin, certain cephalosporin and macrolides. Tonsillectomy is the choice of treatment in chronic and recurrent cases. For tonsillar abscess, drainage of abscess followed by antibiotics and surgery is recommended.²

MATERIALS AND METHODS

This is a cross sectional study conducted in the Department of ENT, Pokhara Academy of Health Sciences (PoAHS). Ethical clearance was taken from the institutional review committee of PoAHS. Duration of study was 2018 July to June 2019 and sample size included was 100 patients. Inclusion criteria: Patients of any age group who presented with sore throat and fever and diagnosed as acute tonsillitis fulfilling McIsaac score⁶ >= 3. Exclusion criteria: Patients with no growth in culture sensitivity report (assumed viral), history of hypersensitivity reaction or who developed hypersensitivity reaction to cloxacillin during course of treatment, pregnant and lactating mother and patients admitted with intra venous drugs. Patient’s throat swab was sent for culture and sensitivity & was prescribed oral Cloxacillin 500mg qid for 10 days. Patients were analyzed after culture sensitivity reports in improvement of their symptoms on 5th to 6th day of treatment. McIsaac score less than 3 was considered as treated and score >3 considered as untreated. The data thus obtained were analyzed using SPSS version 24.

RESULTS

Among the 100 cases, 62 were females and 38 were males. The mean age of the patients under study was 29.26 years and age range was 11-84 years. The most common age group was 21-30 years (41%) and 61-70 and >71years (2%) the lowest in age group. The culture sensitivity reports collected from the patients the most common organism was B Hemolytic streptococcus which was in 54% percentage of the study population followed by staphylococcus aureus in 22% of the population

streptococcus pyogens. Rest of the culture showed 8% klebsiella, in 6% pseudomonas in 4% and 3% each in E coli and streptococcus pneumoniae. In this study 92 % people showed response to treatment and 8% people didn’t respond to treatment and antibiotics were changed. A paired sample t-test was conducted to compare the efficacy of the drug on the basis of McIsaac score before and after the treatment. There was a significant difference in the McIsaac score after the treatment (mean: 1.12, SE: 0.11) as compared to before the treatment (mean: 4.50, SE: 0.51); t (99): 26.72, p<0.001. The results from the pre-test and post-test of the McIsaac score indicate that the use of Cloxacillin resulted in the improvement in the tonsillitis/ treatment of tonsillitis suggesting the efficacy of Cloxacillin in treating acute tonsillitis.

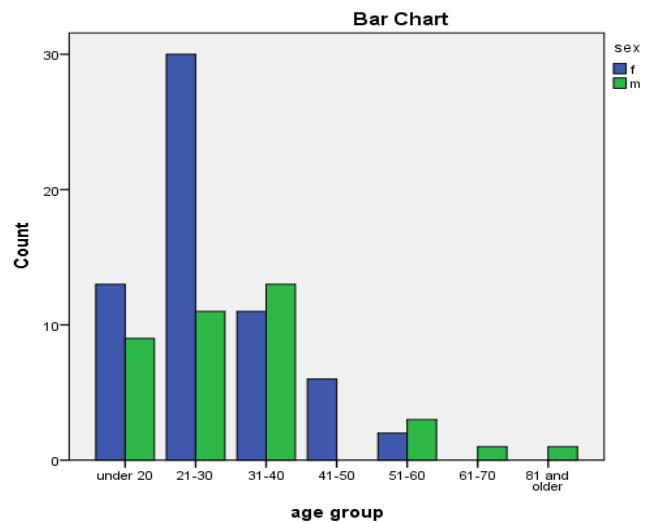


Figure1. Age group under study

Table1.Organisms isolated in Acute Tonsillitis

Organism	Frequency/Percentage (%)
E. coli	3 (3%)
Klebsiella	6 (6%)
Streptococcus pyogens	8 (8%)
Pseudomonas	4 (4%)
Staphylococcus aureus	22 (22%)
B hemolytic streptococcus	54 (54%)
Streptococcus pneumonia	3 (3%)
Total	100 (100%)

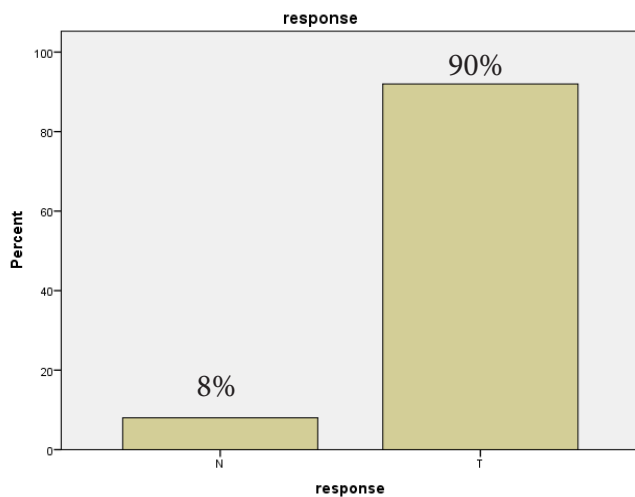


Figure 2. Treatment response to Cloxacillin

Table 2. Age group response to Treatment

	Response		Total	
	N	T		
Age group	under 20	2	20	22
	21-30	3	38	41
	31-40	2	22	24
	41-50	0	6	6
	51-60	0	5	5
	61-70	0	1	1
	71 and older	1	0	1
Total	8	92	100	

DISCUSSION

Acute tonsillitis is a common problem in patients who present to ENT OPD. Children and young adults are commonly affected.^{7,8} It can be bacterial or viral in etiology. Viral infection usually subsides with conservative management in a few days but usually bacterial infection needs medical attention.⁹ Antibiotics are generally prescribed in such patients empirically considering most common organism and its sensitivity pattern. In our study percentage of females (68%) suffering from ENT infections was more than males (32%). In a study conducted by Shrestha R et al acute tonsillitis was 1.33 times more common in females.² In contrast reverse findings were reported by Shankar et al showing higher percentage of males suffering from ENT infections.¹⁰

In our study most common organism isolated was

B Hemolytic streptococcus which was 54% of the study population followed by Staphylococcus aureus in 22% of the population, Streptococcus pyogenes in 8%, Klebsiella in 6% Pseudomonas in 4% and 3% each in E coli and Streptococcus pneumoniae. In similar study done by Sigdel B et al¹¹ S. pyogenes was the commonest isolate 32(33.3%) followed by S. aureus 19(19.8%). Similarly, in another study done by Ylikoski J and Putto A et al^{12,13} similar to our study B Hemolytic streptococcus was the commonest isolate. Group A beta-hemolytic streptococci were reported in 38% of 257 young males in acute tonsillitis cases in the study by Ylikoski J et al. and 31% were found by Putto A et al.^{12,13} Knowing the specific organism and its sensitivity towards particular antibiotics helps early treatment, prevention of complications, cost effectiveness and prevention of drug resistance. Causative organism may change as per time and so do their sensitivity towards certain antibiotics. There are varieties of antibiotic prescription pattern in Nepal. Few institutions practice culture sensitivity examination and prescribe antibiotics accordingly. Amoxycylav was the most commonly prescribed medication in and out of the institution even from local drug store^{3,14}. Because of the irrational use of antibiotic even for viral cases there is increasing pattern of drug resistance¹⁵. The commonly prescribed drug is found to be ineffective in many cases. There is need for a drug with wide range of sensitivity pattern among the common organism in acute tonsillitis. McIsaac score (modified Centor score) was used as a tool for diagnosis and improvement among the patients. Cloxacillin being the commonly prescribed drug in acute tonsillitis in our institution 92% showed improvement with Cloxacillin and in 8% of the study population Cloxacillin was found to be ineffective and antibiotics were changed accordingly. In this study, we aim to find out the common causative organisms at our part of the world and clinical response towards oral Cloxacillin which is not commonly prescribed.

CONCLUSION

Acute tonsillitis is most common among age group 21-30 years and group A Beta hemolytic Streptococcus being the most common isolate. Cloxacillin is found to be effective in the treatment of acute bacterial tonsillitis. The treatment period should not be less than 10 days. Treatment with

Cloxacillin is found to cover a wide range of organisms and could be the antibiotics of choice in health facilities where culture sensitivity facilities are not readily available.

Limitation of the Study

In this study, culture reports provided by hospital are the main tool of investigation. Variety of organism detection depends on the resources and the knowledge of the individual reporting the results. Response to treatment with Cloxacillin only is studied due to resource limitation and other antibiotics could not be included. Anaerobic culture is not available at PoAHS, which is also a limitation of our study.

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