



## Microbiological Study of Pharyngitis at peripheral institute India

Authors

**Anshul Kumar, Avishek Dhiman**

Department of ENT Civil Hospital Jawalamukhi and Civil Hospital Nagrota Bhagwan, India

Corresponding Author

**Dr Avishek Dhiman**

### Abstract

*The aim of the study was to observe the prevalence of various microorganisms from throat swab specimens in patients attending in CH Nagrota Bagwan and CH Jwalamukhi, Kangra (H.P.). All throat swab specimens were collected aseptically from 100 patients and cultured on appropriate bacteriological media. Isolates were identified by biochemical tests & antimicrobial susceptibility performed by standard methods. Out of 100 Samples, culture was positive in 36 samples. So Bacterial infection was found in 36% of Pharyngitis. In our study Streptococcus pyogenes was the commonest isolate, followed by Staphylococcus aureus and Candida albicans. The susceptibility patterns varied depending on the drugs, but most of the organisms were susceptible to amoxyclav, linezolid and vancomycin. This study will be useful for control strategies and for predicting pathogen prevalence in throat swabs in our region.*

**Keywords:** Pharyngitis, Streptococcus Pyogenes, Throat Swab.

### Introduction

Infections of throat have a major impact on public health. Respiratory tract infection (RTI) is considered as one of the major public health problems and a leading cause of morbidity & mortality in many developing countries.<sup>1</sup>

*Streptococcus pyogenes* is one of the commonest bacterial pathogens that causes acute pharyngitis among school-aged children living in poor socio-economic conditions. This Gram- positive bacteria are distributed worldwide and have been associated with a variety of sequelae such as impetigo, otitis media, necrotizing fasciitis, glomerulonephritis, acute rheumatic fever / rheumatic heart disease (RF| RHD).<sup>2</sup>

This present study was aimed to evaluate the prevalence of potential pathogenic microorganisms in throat swab samples from patients with pharyngitis.

### Methodology

This descriptive study was conducted in department of E.N.T. in civil hospital Nagrota Bagwan and Jwalamukhi between June 2019 - Jan 2020. The population included the patients who visited E.N.T. -O.P.D. in above said peripheral institutes.

### Study Population

For the study purpose all the cases of Pharyngitis attended at outdoor of Civil hospital Nagrota Bagwan and Jwalamukhi, India. Among these cases who are not willing to participated in the study were excluded from the study. Total 100 Pharyngitis cases were included in this study.

Every eligible case of Pharyngitis was asked a pre designed proforma to gather desired information about case in detail. All throat swabs were collected from symptomatic cases & processed by direct microscopy, culture and antibiotic

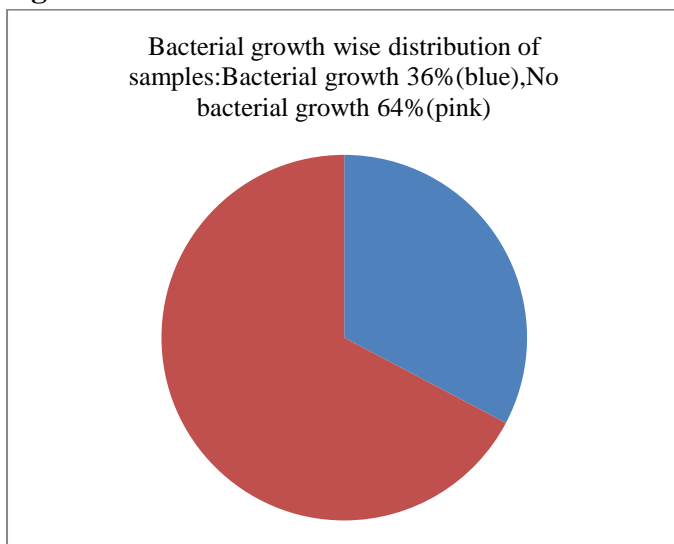
susceptibility test. Direct microscopy was done by Gram’s method. Also specimens were inoculated on Blood Agar & MacConkey agar plates. Any growth is identified by morphology, motility, colony characteristics and bio-chemical tests. Antibiotic sensitivity is performed by disc diffusion. Data thus collected were summarized and analyzed in percentage and proportions on MS Excel.

**Results**

Study population for this study was in the age group of 1 year to 55 years with mean age 17.5 ±6.2 years with female preponderance.

Out of total 100 throat swabs were collected in this study, culture was positive in 36 (36%) samples otherwise other 64 were culture negative. (Figure 1)

**Figure 1**



When these cultures were further processed it was explore that Group-A Streptococci were the most common organisms isolated followed by Staphylococcus aureus and Candida albicans. Out of total 36 isolates, Group-A Streptococci were found in 32 (88%) followed by Staphylococcus aureus 20 (56%) and Candida albicans 4 (12%) of sample isolates. (Figure 2)

When these isolates were further analysed as per age, it was found that Streptococci were found in all the age groups and Staphylococcus aureus & Candida albicans found in >15 years of subjects additionally along with Group- A Streptococci.

On further analysis, in age group of <15 years the total 18 isolates with bacterial growth were of Group-A Streptococci ,staphylococcus aureus and one with candida albicans. most of them were mixed infections. Whereas in age group 16-30 years, out of total 4 isolates found to have bacterial growth which includes in one isolates Streptococci & Staphylococcus aureus and in other one Streptococci & Candida albicans and in other one Staphylococcus aureus. In the age group of 31-45 years out of total 6 isolates found to have bacterial growth. 3 isolates had Staphylococcus aureus alone. Others had mixed infection. In the age group of >45 years out of total 8 isolates found to have bacterial growth 1 isolate had Candida albicans .Others had mixed infection. On anlysis this variation in distribution of organism as per age was not found with significant difference (p>0.05). (Table 1)

**Table 1** Association of Age with Pathogens isolated in Study Samples

Age (in years)	Organisms isolated			Total sample with Bacterial Growth
	Group- A Streptococci	Staphylococcus aureus	Candida albicans	
1 - 15	20	6	1	18
16 - 30	2	2	1	4
31 – 45	4	5	1	6
Above 45	6	7	1	8
Total	32	20	4	36

**Age wise Single and mixed type of Infection**

In this study most of the gram-positive organisms were sensitive to amoxyclav, linezolid and vancomycin.

**Discussion**

In this study out of 100 samples of throat swab, culture was positive in 36 samples. Other authors showed varied observations like in one side Wakode PK et al (2003)<sup>3</sup> found 130 sample positive for bacterial growth out of 305 total

samples studies i.e. positivity found was 42.62% and in other side Pramod E et al (2013)<sup>4</sup> found 40 isolates with bacterial growth out of total 375 sample studied so culture positivity 10.23%. This positivity is reducing with the time may be because of adverse conditions for bacterial growth and improper use of antibiotics. In this study also it is just 36% so is in resonance with studies conducted in this era.

In this study, the most prevalent organism was *Streptococcus pyogenes*, followed by *Staphylococcus aureus* and *Candida albicans*. In present study Group-A Streptococci were found in 88% of isolates with bacterial growth followed by *Staphylococcus aureus* 56% and *Candida albicans* 12% of sample isolates. These observations were quite in resonance with observations of Sobhan N et al (2001)<sup>5</sup> who also found most prevalent organism *Streptococcus pyogenes* in throat swab culture. Other authors<sup>6,7,8</sup> also reported primary pathogen of oropharynx as *Streptococcus pyogenes* and *Staphylococcus aureus* as a secondary pathogen.

In present study most of the gram-positive organisms were sensitive to amoxycylav, linezolid and vancomycin. Wakode PK et al found that isolated bacteria in throat swabs were found to sensitive with Cefotaxime, tetracycline, penicillin and gentamicin.

### Conclusion

Bacterial infection was found in 36 % of Pharyngitis. Majority of bacteria were *Streptococcus pyogenes*, *Staphylococcus aureus* and *Candida albicans*. In many cases it was mixed infection. *Streptococcus pyogenes*, and *Staphylococcus aureus* found as single infection but *Candida albicans* found as mixed with other bacterias. Control of throat infections demands the availability appropriate treatment as most of bacterias were sensitive to amoxycylav, linezolid and vancomycin. Improved personal hygiene and health education of the masses on how to care for ear, nose and throat will greatly reduce these microbial infections.

**Conflicts:** Nil

### References

1. Mustaq N.A: Bacteriology and antibacterial susceptibility of tonsillitis and cronic suppurative otitis media cross sectional study in Al. Habobi Hospital, Thi-Qar: Thi-Qar Medical Journal (TQM) .2011; Vol.5, No(1): 118-125.
2. Cauwenberje PBV, Mijnsbrugge AV: Pharyngitis: a survey of the microbiologic etiology: Pediatrics Infetious Disease Journal. 1991; 10: S39-S42.
3. P.T. Wakode, Gawarle SH, Joshi SV and Bajoria R. Throat wsab culture and Sensitivity reports: An Overview. Indian J Otolatyngol Head neck Surg. 2003 Apr; 55(2):76-80
4. Pramod E Jadhav, Swapnatai A Meshram, Rajnish S Borkar, Satynarayana, M Hemanthro. A study on pattern of organisms in throat swab culture and their sensitivity to antibiotics in patients of RIMS, Adilabad, Andhra Pradesh. Int J Biol Med Res 2013; 4(1):2915-2919
5. Sobhan N, Rajesh K, Pallab R, Harpreet V, and Nirmal K.G: *Group –A Streptococcal* sore throat in a periurban population of northern India : a one year prospective study: Belletin of the Who. 2001; Vol 79:528-533.
6. Gerlol C.J, Andrew G.F, Barrie P.M, Anthony S.M, and Mc Cartney: Practical Medical Microbiology, 14<sup>th</sup> edition : 56- 61.
7. Azeez MM: Bacteriology of otitis media in Oyo, Nigeria: J. Med. Laboratory Sci. 2000; 11(1) : 34-39
8. Regoli M, Chiappini E, Bonsignori F, Galli L, de Martino M (January 2011). "Update on the management of acute pharyngitis in children". *Ital J Pediatr*.37: 10. doi:10.1186/1824-7288-37-10. PMC 3042010 . PMID 21281502.