

Observation of Bacteriological Flora in Active Mucosal Chronic Suppurative Otitis Media in Katihar, Bihar.

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Received: January 2017

Accepted: January 2017

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ABSTRACT

Background: In our country india chronic suppurative otitis media (CSOM) makes a very frequent disease of ear. It usually involve our poor socioeconomic strata of population. **Aims and objective:** Main aim of study was evaluation of type of bacteria which usually involve in the causation of Active Mucosal CSOM. **Methods:** Present study was prospective in nature. The study was done in ENT department of katihar medical college. Collection of aural swab was done from 160 ears. Patient with a recent history of ear trauma having discharge, diabetic patient and those having atticoantral disease were excluded from study. Aural swab was sent to microbiology department for culture and sensitivity test. **Results:** Out of 160 swab bacteria were found in 95 cases and 65 culture were negative. Among 160 patient number of male and female patient was 88 and 72 respectively. Pseudomonas aeruginosa was the most common isolated bacteria (56.8%) followed by staphylococcus aureus (20%) and proteus mirabilis (10.5%) and E.Coli (8.4%) . sensitivity pattern shows that most common antibiotics which was sensitive was ciprofloxacin. **Conclusion:** So it was concluded in my study that pseudomonas aeruginosa was main bacteria found in CSOM. And ciprofloxacin was more sensitive than gatifloxacin for P.aeruginosa.

Keywords: Ciprofloxacin , Otitis media , Pseudomonas aeruginosa.

INTRODUCTION

Otitis media is defined as “an inflammation of the middle ear without reference to etiology or Pathogenesis”.^[1] chronic suppurative otitis media is characterized by intermittent or persistent chronic purulent drainage through a perforated tympanic membrane.^[2] A unifying definition of the term chronic otitis media is any structural changes in the middle ear system associated with a permanent defect in tympanic membrane usually but not always , there is associated inflammatory mucosal disease in the middle ear , which may also involve the mastoid cells . If there is persistent otorrhoea through a nonintact tympanic membrane, the unified designation chronic suppurative otitis media is preferred. The condition is considered chronic if the T.M defect is present for greater than 3 month.^[3]

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Chronic otitis media is often preceded by acute otitis media, leading to mucosal oedema and

infection causing chronic suppurative symptoms. Sequele of the ongoing inflammation can lead to accumulation of granulation tissue, which can cause polyp within middle ear and subsequent blockage of mastoid aeration.^[4]

There are two main variety of CSOM Mucosal (tubotympanic) and squamosal (atticoantral). Tubotympanic also called safe or benign type. It involves the anteroinferior part of middle ear cleft and associated with a central perforation. There is no risk of serious complication in tubotympanic variety. where as atticoantral (squamosal) type also called unsafe or dangerous type.^[5] It involve posterosuperior part of middle ear cleft and associated with attic or marginal perforation of tympanic membrane. this variety is associated with bone eroding process like cholesteatoma ,granulation or osteitis. Risk of complication also high in this variety. Incidence of CSOM is higher in developing countries because of poor socioeconomic condition ,poor nutrition , lack of health education. It affect both sexes and all age group. In india the overall prevalence rate is 46 and 16 person per thousand in rural and urban population respectively .It is also single most important cause of hearing impairment in rural population.^[6] CSOM is worldwide prevalent disease. It causes psychological trauma and financial burden to the society especially due to hearing loss .

It is extremely common in otorhinolaryngology practice all over the world.^[7]

MATERIALS AND METHOD

All the ear were examined under microscopic magnification to rule out whether case belong to safe (mucosal) or unsafe (squamosal) variety. And only safe (mucosal) variety was selected for study. Ethical clearance from institution and informed consent from patient were taken. Sample was collected before administering any antibiotic therapy. Sample was collected under examination microscope with a sterile swab stick and they were sent to microbiology department. Samples were incubated for 48 hour at 37 degree centigrade in nutrient agar and different media. Sensitivity test was performed by using ciprofloxacin and gatifloxacin. All the results are tabulated and analyzed and compared with other Standard studies.

RESULT

A period of 18 month was taken in to study. The detail information regarding age sex , religion , economic status , bacterial isolates and their sensitivity pattern were noted.

Age incidence

As shown in Table 1 majority of cases (80%) were between 0-20yrs old.

Table 1: Showing age incidence percentage wise.

0-5 yr	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
20%	36%	15%	10%	11%	2%	2%	1%	1%	2%

Out of 160 patient 88 (55%) were male and 72(45%) were female [Table 2].

Table 2: Showing sex distribution.

Male	Female
88(55%)	72(45%)

Out of 160 patient 93(58.12%) were hindu and 67(41.8%) were muslim as shown in Table 3.

Table 3: Showing religion wise pattern.

Hindu	Muslim
93(58.12%)	67(41.8%)

Economic status

Patient were divided in to three groups such as high middle and low socioeconomic group according to their per month income.

High socioeconomic ; - more than 15000 INR per month

Middle socioeconomic ; - between 5000 -15000 INR

Low socioeconomic ; - below 5000 INR per month

It was observed that 67% cases were in low socioeconomic group, 24% in middle and 9% in high group as shown in Table 4.

Table 4: Showing economic strata wise incidence

High socioeconomic group	Middle socioeconomic	Low socioeconomic
09%	24%	67%

Out of 160 case 95(59.37%) were culture positive and 65(40.63%) were culture negative [Table 5].

Table 5: Show culture positivity and negativity

Culture positive	Culture negative
95(59.37%)	65(40.63%)

Out of 95 culture positive cases pseudomonas 54(56.8%) was the commonest bacteria followed by staphylococcus aureus 19(20%), and proteus 10(10.5%) and E. Coli 8 (8.4%) as shown in Table 6.

Table 6: Show distribution of bacterial isolate.

Organism	No of Cases	Percentage
Pseudomonas aeruginosa	54	56.8%
Staphylococcus aureus	19	20%
proteus	10	10.5%
E. Coli	8	8.4%
Mix flora	4	4.2%

Out of 95 positive culture gram positive type was (76 %) and gram negative was (24 %) as shown in Table 7.

Table 7: Showing gram positive or negative pattern

Gram positive	Gram negative
24%	76%

It was observed that ciprofloxacin was most effective against pseudomonas and Staph aureus in 71% and 66% respectively. ciprofloxacin was more superior in comparison to gatifloxacin particularly in pseudomonas whereas for E.Coli gatifloxacin shows 95% sensitivity.

Antibiotics	P aeruginosa	Staph aureus	E. coli
ciprofloxacin	71%	66%	58%
gatifloxacin	63%	54%	95%

DISCUSSION

One hundred sixty cases of active mucosal chronic suppurative otitis media was studied in this study. The result shows that incidence is going to be increasing. Majority of cases of chronic otitis media were observed in children below 10 yrs old. Explanation for this condition are more prone to be upper respiratory tract infection such as tonsillitis, adenoids , common cold , sinusitis etc.

Eustachian tube dysfunction plays an important role in the development of chronic otitis media.^[8] The

rate of perforation seen in the 2-4 yr old age group at which stage the rate of perforation is roughly three times the rate seen in childhood.^[9] CSOM is described as disease of poor socioeconomic group and in children.^[10] Some studies have demonstrated male predominance.^[11]

Environmental factors such as number of hour spent in child day care , passive exposure to smoke , lack of breast feeding in infancy and low socioeconomic status have all been implicated in higher otitis media rates.^[12] This study also shows that 80% of cases were below 20yrs and it was more common in male and more prevalent in poor socioeconomic people.

A review of studies of microorganism implicated in CSOM of at least two weeks duration found that in children as in adults the most commonly organism is pseudomonas aeruginosa.^[13] Pseudomonas aeruginosa is an extracellular opportunistic pathogen that is frequently encountered in chronic infection. It utilizes two major mechanism to evade the host defence system. The other mechanism by which pseudomonas aeruginosa evades the host defence system is through production of biofilm.^[14] The biofilm induces a low phagocyte response and provides a barrier for the bacteria against antibodies , compliment and the cells of the immune system.^[15]

The most common aerobic bacteria isolates are P. Aeruginosa , staph aureus and other gram negative bacilli for example E .Coli , proteus and klebsiella.^[16] Our study also shows that pseudomonas aeruginosa was the most common isolated bacteria (56.8%) followed by staphylococcus aureus (20%) and proteus mirabilis (10.5%) and E.Coli (8.4%) and mix flora (4.2%) .

In comparison with ciprofloxacin ,gatifloxacin has reduced activity against p.aeruginosa in a study of 5517 north american pseudomonas isolates the percentage susceptibility for gatifloxacin and ciprofloxacin were 69% and 75% with mic 90 value of > 4 and > 2microgram per ml , respectively by sadar et al 2005.^[17] Our study also shows that ciprofloxacin was most effective against pseudomonas and Staph aureus in 71% and 66% respectively. Ciprofloxacin was more superior in comparison to gatifloxacin particularly in pseudomonas whereas for E.Coli gatifloxacin was sensitive in 95%.

CONCLUSION

Pseudomonas aeruginosa was most common pathogen encountered in active mucosal chronic suppurative otitis media. Out of 95 culture positive cases pseudomonas 54(56.8%) was the commonest bacteria followed by staphylococcus aureus 19(20%), and proteus 10(10.5%) and E. Coli 8 (8.4%). ciprofloxacin was most effective against pseudomonas and Staph aureus in 71% and 66% respectively. ciprofloxacin was more sensitive than gatifloxacin for p .aeruginosa.

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How to cite this article: Ali MA, Noori FM, Mandal SK, Dev S. Observation of Bacteriological Flora in Active Mucosal Chronic Suppurative Otitis Media in Katihar, Bihar. Ann. Int. Med. Den. Res. 2017; 3(2):EN07-EN09.

Source of Support: Nil, **Conflict of Interest:** None declared