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**Research Article** 

## ETIOLOGICAL PROFILE AND SENSITIVITY SPECTRUM OF ISOLATES FROM CHRONIC SUPPURATIVE OTITIS MEDIA AT A TERTIARY CARE HOSPITAL

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## Abstract:

**Background:** Incessant supportive Otitis media (CSOM) is chronic irritation of centre ear, which speaks to with repetitive ear release and is pervasive around the world.

**Objective:** To decide the etiological profile and affectability range of microorganisms of endless suppurative otitis media in a tertiary consideration medical clinic.

*Material and Methods:* This engaging research was directed at Jinnah Hospital, Lahore from September 2017 to November 2018. This examination included 285 patients who had releasing ears over 3 months. The swabs were plated on Mac Conkey agar, Blood agar and Chocolate agar and hatched for 24 to 48 hours at 37°C. Recognizable proof of bacterial strains was finished by pilgrim morphology on particular and differential medium. Negligible inhibitory focuses (MIC) of these anti-toxins were observed by the rule of the National Committee for Clinical Laboratory Standards (NCCLS). The information was breaking down utilizing the SPSS.

**Results:** This investigation included 285 cases establishing 184 male and 101 females, with a male: the female proportion of 1.8:1. The age of the patients extended from 08-46 years with a mean time of (39.91 + 15.27) years. In the larger part of patients (73.68%) single life form was secluded. Among the segregates Pseudomonas aeruginosa was the commonest (46.31%). The anti-microbial vulnerability profile of the bacterial disconnects uncovered that ciprofloxacin had most noteworthy affectability against pathogens confined from CSOM.

**Conclusion:** It is inferred that Pseudomonas aeruginosa is the commonest etiological specialist in interminable suppurative otitis media in our set up and ciprofloxacin is the antimicrobial operator with most noteworthy affectability.

Keywords: Incessant Support, Chronic, Irritation, Etiological Profile, Microorganisms, Otitis and Morphology.

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## **INTRODUCTION:**

Otitis media (OM) is an aggravation of the centre eardrum and the inward ear, including a pipe known as the Eustachian tube. There are three kinds of otitis media, and these are, intense purulent otitis media, otitis media with emanation (OME) and endless suppurative otitis media (CSOM). Chronic suppurative otitis media (CSOM) is characterized as an incessant aggravation of the centre ear and mastoid hole, which presents with intermittent ear releases through a tympanic aperture. Otitis Media is profoundly predominant worldwide. Otitis media is normal in youth and is quite often joined by a viral upper respiratory contamination (URI) with a pinnacle rate between 4 - 7 years old. Seventy-five percent of kids involvement with at least one scene by their third birthday celebration. Practically 50% of these youngsters will have at least 3 ear contaminations amid their initial 3 years. The purpose behind the higher recurrence in these populaces is the anatomic contrasts in skull base and Eustachian tube and biologic helplessness. The noteworthy hazard factors in otitis media incorporate financial status, social, occasional, and age factors, just as family ancestry of centre ear illness. More than 50 percent of the instances of otitis media are brought about by bacteria. Occasionally, otitis media might be brought about by growths, infections, Mycoplasma pneumonia. The most widely recognized bacterial pathogens of OM are Streptococcus pneumoniae, Hemophilus flu and Moraxella catarrhalis. Different pathogens in charge of OM are Staphylococcus aureus, Escherichia coli, Klebsiella species, Pseudomonas aeruginosa and Proteus species. Microbial contamination can surely include various pieces of the ear, yet disturbance of the squamous epithelium or skin limbs of the outer sound-related channel happens less every now and again due to horizontal relocation of keratin and flotsam and jetsam, low pH, and wax development which contains an assortment of antimicrobial substances. Clinically CSOM presents with ear release and conductive deafness. The nearness of otalgia, noxious release, and blood recolored discharge are markers of mounting complications. Though the treatment of CSOM is disputable somewhat and exposed to change particularly in creating nation like Pakistan. The antibiograms of these life forms have been accounted for to fluctuate with time and the geological region just as landmass to the mainland, most likely because of the utilization and maltreatment of anti-microbials. Therefore, this investigation was directed to know the etiological profile and affectability profile of bacterial specialists of CSOM in our locale.

#### **MATERIAL AND METHODS:**

This engaging research was directed at Jinnah Hospital, Lahore from September 2017 to November 2018. This investigation included 285 patients. Every one of the patients of all ages, any race and either sex who had releasing ears over 3 month's term was incorporated into this examination. Patients utilizing topical or foundational anti-infection agents for over seven days release with flawless tympanic film (otitis externa) and those having to release ears less than 3 months span were prohibited from the investigation. A nitty gritty history in regards to ear release, beginning, length, recurrence and related ailment was taken from patients or guardians. Intensive examination of ears, nose and throat explicitly concentrating on releasing ears and foundational examination was likewise performed. All around educated assent was taken from patients/guardians clarifying the system, its dangers, and advantages: The investigation was affirmed by the emergency clinic moral board. The examples were gathered with sterile swab sticks which were appropriately marked for every patient. The swab sticks were taken to Microbiology Laboratory, for examination. The swabs were plated on Mac Conkey agar (Oxoid CM115), Blood agar (Oxoid CM55) and Chocolate agar and brooded for 24 to 48 hours at 37°C. The ID of bacterial strains was finished by pilgrim morphology on specific and differential medium. All confines were biochemically tried. The swab sticks were streaked legitimately on the all-around named Sabouraud Dextrose Agar (SDA) plates and hatched at room temperature for contagious development. The development was distinguished dependent on their morphological and social qualities and minute examination was finished utilizing lactophenol blue recolouring system. Every single confined strain was tried for defenselessness to anti-microbials by agar weakening strategy utilizing Mueller-Hinton agar (Oxoid CM337). The antiinfection agents tried were amikacin (Bristol Myers Squibb). gentamicin (Reckitt Benckiser). ciprofloxacin (Sami Pharmaceuticals), ceftazidime (Glaxo Wellcome), ceftriaxone (Bosch Pharmaceuticals), imipenem (Merck Sharp and Dohme) and aztreonam (Bristol Myers Squibb). Insignificant inhibitory focuses (MIC) of these antimicrobials were observed by the rule of the National Committee for Clinical Laboratory Standards (NCCLS). Every one of these patients was followed as long as 3 months. The information was gathered on a proforma and measurable examination was performed utilizing the SPSS.

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## **RESULTS:**

This investigation included 285 cases comprising 184 male and 101 female, with a male: the female proportion of 1.8:1. The age of the patients extended from 08-46 years with a mean period of  $39.91 \pm S.D$  15.27 years. Greater parts of the patients (40%) were under 10 years old. The vast majority of the patients

(65.61%) had a place with a lower financial gathering of the general public. The patients introduced mostly (31.22%) in late spring of the year. One-sided CSOM was found in 68.07% and the right ear was engaged with 54.73% patients. In the larger part of patients (73.68%) single life form was separated (Table I).

Table –	I:	Patients	Characteristic	(N=285)	
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Patients Status	Frequency	Percentage			
	Sex				
Male	184	64.56%			
Female	101	35.43%			
Age groups					
<1 0 years	114	40%			
11-20 Years	96	33.68%			
>20 years	75	26.31%			
	Season				
Summer	89	31.22%			
Winter	78	27.36%			
Autumn.	66	23.15%			
Spring	52	18.24%			
Socioeconomic Status					
Lower	187	65.61%			
Middle	70	24.56%			
High	28	9.82%			
Distribution of CSOM					
Unilateral CSOM	194	68.07%			
Bilateral CSOM	91	31.92%			
Right CSOM	156	54.73%			
Left CSOM	129	45.26%			
Bacterial Growth					
Single Isolates	210	73.68%			
Mixed Isolates	70	24.56%			
No growths	5	1.75%			



Table - II: Antibiotic susceptibility profile of the bacterial isolates (N-280)

	Antibiotics tested and sensitivity						
Types and No of isolates	Amikacin	Gentamicin	Ciprofloxacin	Ceftazidime	Ceftriaxone	Imipenem	Aztreonam
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
Staphyloccus aureus(n-96)	52(54.16)	21(21.87)	87(90.62)	0(0.0)	0(0.0)	0(0.0)	33(34.37)
Staphylococcus epidermises(n-7)	4(57.14)	6(85.71)	3(42.85)	5(71.42)	29(28.57)	6(85.71)	4(57.14)
Corynebacterium sp(n-2)	1(50)	1(50)	2(100)	0(0.0)	0(0.0)	1(50)	0(0.0)
Streptococcus sp(n-1)	1(100)	0(0.0)	1(100)	0(0.0)	0(0.0)	1(100)	1(100)
Pseudomonas aeruginosa(n-132)	76(57.57)	98(74.24)	119(90.15)	37(28.03)	21(15.90)	11(8.330)	9(6.81)
Klebsiella sp(n-23)	14(60.86)	9(39.13)	18(78.26)	0(0.0)	16(69.56)	5(21.73)	0(0.0)
Escherichia coli(n-7)	5(71.42)	3(42.85)	4(57.14)	2(28.57)	1(14.28)	0(0.0)	2(28.57)
Proteus mirabilis(n-4)	1(25)	2(50)	4(100)	3(75)	0(0.0)	1(25)	0(0.0)
Enterobacter sp(n-2)	1(50)	0(0.0)	2(100)	0(0.0)	1(50)	2(100)	0(0.0)
Citrobacter sp(n-1)	0(0.0)	0(0.0)	1(100)	0(0.0)	0(0.0)	1(100)	0(0.0)
Bacteroides sp(n-5)	4(80)	2(40)	1(20)	2(40)	3(60)	4(80)	0(0.0)

Among the detaches Pseudomonas aeruginosa was the commonest (46.31%) gram-negative microscopic organisms while Staphylococcus aureus was the commonest (33.68%) among gram-positive microorganisms (Table III). The anti-microbial powerlessness profile of the bacterial detaches uncovered that ciprofloxacin had most astounding affectability against pathogens separated from CSOM (Table II).

Types of organisms		Frequency	Percentage
А	Aerobic organisms	275	96.49%
1	Gram-positive bacteria	106	37.19%
	Staphylococcus aureus	96	33.68%
	Staphylococcus epidermis	7	2.45%
	Corynebacterium sp	2	0.70%
	Streptococcus sp	1	0.35%
2	Gram-negative bacteria	169	59.29%
	Pseudomonas aeruginosa	132	46.31%
	Klebsiella sp	23	8.07%
	Escherichia coli	7	2.45%
	Proteus mirabilis	4	1.40%
	Enterobacter sp	2	0.70%
	Citrobacter sp	1	0.35%
В	Anaerobic organisms	5	1.75%
	Bacteroides sp	5	1.75%
С	Fungal Organisms	5	1.75%
	Aspergillus Niger	3	1.05%
	Candida sp	2	0.70%

 Table – III: Microbiological profile of microorganisms (N-285).

## **DISCUSSION:**

Constant suppurative otitis media, for the most part, starts in adolescence as an unconstrained tympanic puncturing because of intense contamination of the centre ear, known as intense otitis media, or as a spin-off of less extreme types of otitis media. CSOM and different intricacies related with the malady, for example, irreversible nearby obliteration of centre ear structures, facial paralysis, genuine intracranial and extracranial entanglements are among the most widely recognized conditions seen by the otologist, pediatrician and the general practitioner. It is increasingly basic in youngsters having a place with lower financial gathering. Most normal microorganisms found in CSOM are Pseudomonas aeruginosa, Staphylococcus aureus and Escherichia coli yet these living beings change in different land areas. The essential standards of restorative administration of CSOM are aural cleanliness and the utilization of a topical antimicrobial specialist. The aimless and erratic utilization of anti-toxins and poor follow-up of these patients has brought about the development of a different safe strain of microorganisms.' Ear disease happens in both genders. In our investigation male were basically (64.56%) influenced mimicking Okesola examine however differing investigation of Abdullah who had female power. CSOM can be experienced at any age

however generally more youthful youngsters are influenced as we found that 40% of patients were under 10 years which is equivalent to the investigation of Adoga. This infection may happen all over and whenever yet in our examination there was the occasional preference with 31.22% cases were enlisted in mid-year reproducing other studies. There are numerous hazard factors in charge of CSOM. Destitution is the principle offender prompting CSOM. In this investigation, 65.61% of patients had a place with a lower financial gathering of society which is in understanding to the investigation of Bowdll and Srivastava. In this examination single pathogen was the commonest (73.68%) discovering which mimics the investigation of Okesola who discovered single pathogen in 90.9% patients. Anyway, blended pathogen was found in 24.56% and in 5 cases (1.75%) no development was confined which is in concurrence with work of Loy who discovered single pathogen in 63.3% cases, blended life forms in 34.44% patients and sterile culture in 2.2% patients. In this investigation, both oxygen consuming and anaerobic microbes were refined from patients having CSOM. Anyway, Pseudomonas aeruginosa was the commonest gram negative microscopic organisms (n-132, 46.31%) while Staphyloccus aureus was on top (33.68%) among gram positive microorganisms which is in understanding to Hassan's research where Pseudomonas aeruginosa was representing the most astounding (38.50%) trailed by Staphyloccus aureus (30.8%). Our findings are unique in relation to aftereffects of Yamanaka and Sega who discovered Hemophilus flu and Streptococcus pneumonia the most pervasive life forms. Bacteroides Sp was the main anaerobic microbes gathered from 5 patients (1.75%) and contagious pathogens were likewise found in 1.75% patients. Comparable discoveries are likewise revealed in the investigation of Osazuwa, Ramakrishnan and Srivastava. Sensitivity example of various anti-microbials was checked by the NCCLS rules. Pseudomonas aeruginosa demonstrated most astounding affectability to ciprofloxacin (90.15%) trailed by gentamicin (74.24%) which is pleasing to the investigation of Mansoor and Abdullah vet at the difference to the investigation of Osazuwa. Staphyloccus aureus indicated most noteworthy helplessness to ciprofloxacin (n-87, 90.62%) trailed by amikacin (54.16%) and gentamicin (21.87%) which is practically identical to the investigation of Okesolaand Loywho likewise announced that Staphyloccus aureus had the greatest affectability to ciprofloxacin and gentamicin. Concerning aureus affectability, our outcomes contrasts from that of Hassan's who found that Staphyloccus aureus had most extreme defenselessness to streptomycin. In this examination, a few pathogens additionally indicated protection from lion's share of antimicrobial operators which are accounted for in literature.

### **CONCLUSION:**

It is reasoned that Pseudomonas aeruginosa is the commonest etiological operator in constant suppurative otitis media pursued by Staphylococcus aureus in our set up and ciprofloxacin is the antimicrobial specialist with most elevated affectability. The high obstruction of microbial operators can be anticipated by maintaining a strategic distance from aimless and foolish utilization of anti-microbials.

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