Study of Type of Bacteria That Found in Ear, Mouth, Nose of Second Stage Nursing Department Student

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Abstract

The samples collected from 70 nursing student second stage ,the sample was mouth ,ear ,nose .The sample cultured on nutrient agar ,MaCconkey agar ,Mannitol agar ,and brain heart agar. Observed different type of bacteria on MaCconkey agar (lactose fermenting ,lactose non fermenting ,lactose slow fermenting ,Mucoid shape ,and different type of bacteria on Mannitol Agar and nutrient agar .after that the isolate tested with Gram stain , Catalase test and then Analytic profile index perform. The results showed the bacteria is (5) (0,5%)isolates of Staphylococcus aureus and (2)(0,2%) isolates of pseudomonas aeruginosa from 70 ear samples , (5)(0,64%)isolates Staphylococcus aureus and (4)(0,51%)isolates of Staphylococcus epidermedis from 70 mouth samples and 5(0,5%) isolates from pseudomonas aeruginosa ,(2)(0,2%) isolates of Serratia marcescens from70 nose samples.And then the antibiotic sensitivity tested against :

Ciprofloxacin ,Gentamycin,Vancomycin,Pencilin,Azithromycin,Cefex,Amikacin,levofloxacin3 and the result as in table below :

(Antibiotic sensitivity test result)

Antibiotics / Bacteria	VA	p	ATM	CN	AK	LEV	CIP
Staphylococcus aureus	+	-	+	+	+	+	+
Staphylococcus epedermidis	-	-	+	-	+	+	+
Pseudomonas aeroginosa	+	+	+	+	+	+	+
Serratia marcescens	+	-	-	-	-	+	+

+ mean sensitive , - mean resistant

Key words: *Nose , mouth, ear microbe*

Introduction

Oral microbes are an important part of the human microbiome, and the unique and diverse microflora, distributed in various oral ecological niches such as the tongue dorsum and the periodontal crevice and pockets, are indispensable .The human oral cavity contains a number of different habitats, including the teeth, gingival sulcus, tongue, cheeks, hard and soft palates, and tonsils, which are colonized by bacteria. The oral microbiome is comprised of over 600 prevalent taxa at the species level, with distinct subsets predominating at different habitats [1]. The oral cavity is comprised of many surfaces, each coated with a plethora of bacteria, the proverbial bacterial biofilm. Some of these bacteria have been implicated in oral diseases such as caries and periodontitis, which are among the most common bacterial infections in humans. For example, it has been estimated that at least 35% of dentate U.S. adults aged 30 to 90 years have periodontitis. In addition, specific oral bacterial species have been implicated in several systemic diseases, such as bacterial endocarditis , aspiration

pneumonia , osteomyelitis in children , preterm low birth weight , and cardiovascular disease . Surprisingly, little is known about the microflora of the healthy oral cavity [2-6]. Anaerobic bacteria in the oral cavity include: Actinomyces, Arachnia, Bacteroides, Bifidobacterium, Eubacterium,Fusobacterium,Lactobacillus,Leptotrichia, Peptococcus, Peptostreptococcus, Propionibacter(6). Veillonella. The nasal cavity of 97 young healthy men (applicants for the pilot education in the Finnish Air Force) was examined. Bacterial culture demonstrated one or more species of aerobic bacteria in all 194 nasal cavities examined and anaerobic bacteria in 76.5%. In ten per cent of the cultures bacteria were detected after enrichment only. The most common aerobic bacteria were Staphylococcus epidermidis (79%), diphtheroids (41%) and Staphylococcus aureus (34%). Haemophilus influenzae was found in 5% and Streptococcus pneumoniae in 0.5%. [7] The microbial flora of the outer ear canal was determined for 77 healthy individuals (M = 44, F = 33). No growth of any microbe was found in 5% of males and 15% of females. Coagulase-negative staphylococci, dominated by Staphylococcus epidermidis, were the commonest microbe group found (83% of persons sampled). Staphylococcus aureus was found in 7% males and no females. Diptheroids were cultured from 32% of the samples. [8] The outer ear is exposed to the external environment and much like skin on other parts of the human body is in contact with microbial life. Both the auricle and the external auditory meatus house a variety of microbes under healthy conditions. The outer ear is exposed to the outside oxygen-filled environment, the majority of the bacterial flora on the auricle and in the external auditory canal is made up of aerobic species. The outer ear is home to a diverse set of microbes including bacteria, viruses, and fungi [9,10]. The skin of the external auditory canal and auricle is predominantly occupied by Gram-positive over Gram-negative bacteria . The main Gram-positive bacteria are staphylococci, coryneforms, streptococci and enterococci, micrococci, and bacillus. Gram-negative species inhabit the auricle and skin of the external auditory meatus to a much lesser extent with Pseudomonas aeruginosa and Moraxella osloensis in relative abundance. Some fungal microbes can be found in the skin of the outer ear, but are less abundant than either Gram-positive or Gram-negative bacteria [11]. *Staphylococcus aureus* is notorious for its ability to become resistant to antibiotics. Infections caused by antibiotic-resistant strains often occur in epidemic waves initiated by one or a few successful clones. [12]

Staphylococcus aureus is naturally susceptible to virtually every antibiotic that has ever been developed. Resistance is often acquired by horizontal transfer to genes from outside sources, although chromosomal mutation and antibiotic selection are also important. It ant to vancomycin, penicillin ,Quinolone, ,methicillin . [13] *Staphylococcus epidermidis* is a group of mannitol-fermenting coagulase-negative staphylococci characterized by multiple antibiotic resistance, very similar biochemical characteristics, and phage susceptibility. Clinical isolates belonging to this group are resistant to most antibiotics tested, including oxacillin, lincomycin, and novobiocin. The only antibiotic to which all tested strains are sensitive is vancomycin [14]. Treatment of infectious diseases becomes more challenging with each passing year. This is especially true for infections caused by the opportunistic pathogen *Pseudomonas aeruginosa*, with its ability to rapidly develop resistance to multiple classes of antibiotics. Although the import of resistance mechanisms on mobile genetic elements is always a concern, the most difficult challenge we face with *P. aeruginosa* is its ability to rapidly develop resistance during the course of treating an infection [15]. The problems associated with hospital infections caused by Serratia marcescens have become increasingly evident [16-18] The spectrum of infections includes meningitis, pulmonary infections, septicemia, endocarditis, and a variety of localized infections. The ability of this opportunistic pathogen to acquire resistance to a broad range of antibiotics has made effective therapy more difficult. Several recent investigations have dealt with the problem of antibiotic resistance in Serratia [19-22]. The overall findings of these studies indicate that the polymyxins and cephalosporins are the least effective agents against Serratia in vitro, and although gentamicin, kanamycin, chloramphenicol, and nalidixic acid are the most effective, resistance to kanamycin and chloramphenicol, as well as the p-lactam antibiotics, has increased during the last decade [21,22].

Materials and Methods

The sample taken swabs from nose ,mouth ,ear ,and cultured on MaCconkey agar ,Manitol salt agar , Nutrient agar and incubated in 37C in incubator for 24 hours . Then the biochemical test applied at first gram stain and Gatalase test , then analytic profile index test applied .

The bacteria species tested with antibiotics sensitivity test

Results

The results showed the bacteria is (5)(0,5%) isolates of Staphylococcus aureus and (2)(0,2) isolates of pseudoumonas aeruginosa from 70 ear samples ,this result same the result in(10) , (5)(0,64%)isolates Staphylococcus aureus and(4)(0,51%)isolates of Staphylococcus epidermedis from 70 mouth samples and 5(0,5%) isolates from pseudomonas aeruginosa,(2) (0,2%) isolates of Serratia marcescens from 70 nose samples this results same result in [23] . And the antibiotic sensitivity tested against

Ciprofloxacin ,gentamycin

Vancomycin .Pencilin , Azithromycin,

Amikacin,levofloxacin3 show the results as the table below:

Antibiotics / Bacteria	VA	p	ATM	CN	AK	LEV	CIP
Staphylococcus aureus	+	-	+	+	+	+	+
Staphylococcus epedermidis	-	-	+	-	+	+	+
Pseudomonas aeroginosa aeruginosa	+	+	+	+	+	+	+
Serattia marcescens	+	-	-	-	-	+	+

(Antibiotic sensitivity test result)

+ mean sensitivity

-mean resistant

LEV=Levofloxacin VA=Vancomycin P=Penicilin CN=Gentamycin

CIP=Ciprofloxacin Ak=Amikacin ATM=Azithromycin

The result showed the Staphylococcus aureus sensitive to vancomycin and this result does not match the result of (24), and Staphylococcus aureus sensitive to levofloxacin ,pencilin ,gentamycin,ciprofloxacin,amikacin,azithromycin ,

This result match with resulte in (25), Staphylococcus epedermedis sensitive to amikin

,levofloxacin, Ciprofloxacin , azithromycin. , this resulte\\ match with result in (26) and resistant to Vancomycin,as result in(28) and sensitive to Pencilin and Gentamycin this result match with result in (29) . the result show the Pseudomonas aeruginosa sensitive to pencilin , amikacin and gentamycin this result match the result in (30), and sensitive to Levofloxacin, Vancomycin, Ciprofloxacin, Azithromycin this result same the result in (31) and not match with result in (32), and the result show the Serattia marcescens sensitive to Vancomycin,Ciprofloxacin,Levofloxacin ,gentamycin , this result match with result in (33) and this result not match with result in (34) and not match with result in (35) .

And the result show resistant to amikacin this result not match with result in (34) also not match with result in (35).

Conclusion

1- Staphylococcus aureus and Pseudomonas aeruginosa are the bacteria which found in ear.

2- Staphylococcus aureus and Staphylococcus epidermidis are the bacteria which found in mouth

3- Psedoumonas aeruginosa and Serratia macrescence are the bacteria which found in nose .

4- Staphylococcus aureus sensitive to Ciprofloxacin, Amikacin, Azithromycin ,Vancomycin,Gentamycin, Levofloxacin and resistant to penicillin.

5- Staphylococcus epidermidis sensitive to Amikacin ,Ciprofloxacine Levofloxacine,azithromycin and resistant to Pencilin,Vancomycin,Gentamycin.

6- Pseudomonas aeruginosa sensitive to Pencillin, Vancomycin, Gentamycin Ciprofloxacine, Levofloxacine, Amikacin, Azithromycin .

7- Serratia marcescens sensitive to vancomycin, Levofloxacin, Ciprofloxacine and resistant to Azithromycin, Penicillin, Gentamycin, Amikacin.

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