

Bacteria and Fungi Associated with Acute Otitis Media

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Abstract

To identify the bacteria and fungi from the otitis media inflammation samples taken during otitis media of patients with acute, This work was applied on 44 otitis media patients admitted to the Hospital in Hilla with age range (9-60) years .

Swabs cultures of otitis media patients reveals major types of bacteria growth shown in Isolated and diagnostic types of bacteria G+ve and G-ve which form G-ve with percentage 60.97% also *M.catarhals* form percentage 21.9% and other of these *Ps. aeruginosa* form percentage 20.7% and lessness famous *H.influnza* form percentage 1.21.% the bacteria G-ve form percentage 39.2% in front of *St.pnemonia* percentage form percentage 19.5% and other bacteria *S,aurius* percentage 17.7% and lessness famous of bacteria *St, pyogens* in percentage 2.03%.

This study also Isolated and diagnostic type of fungi compare to the patints of otitis which type of sample fungi 54 in front of *A.flaves* percentage 24.7% and other of it *A.fumguts* in percentage 22.2% and lessness famous *A.alternaria* in percentage 3.7%.

Keywords: Otitis media Infection , Bacteria and Fungi from the otitis media inflammation.

Introduction

Otitis Media is inflammation of the middle ear. Otitis media occurs in the area between the ear drum and the inner ear, including a duct known as the eustachian tube (Richard and Robert, 1996).

Otitis media is very common in childhood, with the average toddlers having two to three episodes a year and this is always accompanied by a viral upper respiratory infection (URI), mostly common cold caused by influenza virus (Richard and Robert, 1996).

Otitis media has been reported to be the most common infection in young children (Gunnsteinn et al., 2004)

There are two types of Otitis Media inflammation

1- chronic Otitis media

Is characterized by recurrent or persistent ear discharge over (2-6) weeks, through a perforation of the tube media, COM occurs when ET becomes blocked repeatedly due to allergies, multiple infection, ear trauma or swelling of the adenoids. (Brunton and Pichincho, 2005)

2- Acute Otitis media

Acute otitis media (AOM) can cause pain that leads to insomnia for patients, loss of balance, unresponsiveness to quiet sounds, unusual irritability, draining of fluid in the ear, eardrum perforations and result in mastoiditis, otorrhea, and/or meningitis, brain abscess, and even death if a severe infection goes untreated long enough. (Kontiokari et al. 1998).

The aim of this study.

The aim of this research work was to isolate and identify the microorganisms associated with acute otitis media infection

Materials and Methods

Collection of samples

Purulent materials were collected from (45) different patients suffering from otitis media at Hilla Teaching Hospital, The samples were collected with sterile swab sticks which were properly labelled indicating the source, date, time of collection, and age of patients

Bacterial Isolation

Bacteriological study includes culturing of otitis media Swabs with selective and differential media Deoxycholate Agar (Oxoid, UK), MacConkey Agar (Oxoid), Nutrient Agar (Oxoid), Blood Agar (Oxoid) was used and incubated at 37°C for 24 h. Biochemical investigations were done for bacterial identification (McFadden, 2000).

Fungal Isolation

Fungal study includes culturing of otitis media Swabs with Sabouraud Dextrose Agar (SDA) plates and incubated at room temperature. The growth was visible within 5 - 7 days, identification by using Lactophenol blue pigment for direct microscope examination (Koneman et al. 1987).

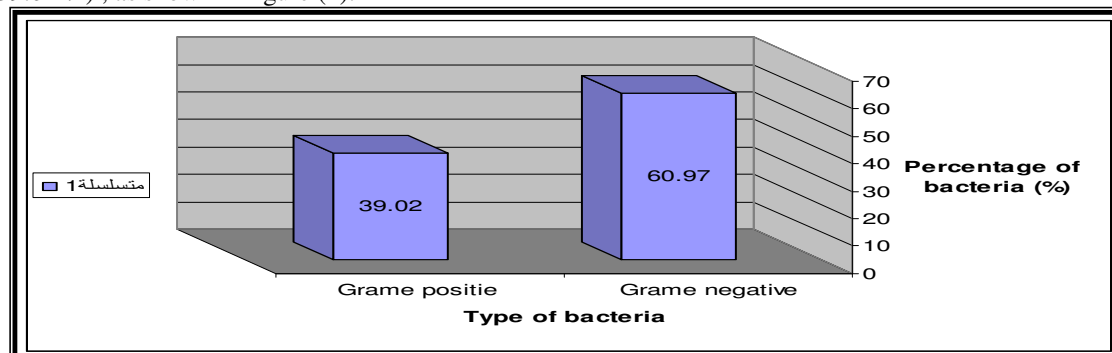
Statistical Analysis

The prevalence of organisms was determined and expressed in percentage.

Results and Discussion

Bacterial Isolate from otitis Media.

At otale of 45 otitis media swabs wee subjected for culturing on different type of culture media.from the results it wase shown thate Grame negative bacteria constitutes (60.97 %) from the totale isolates and were considered the predominante aetological agent of otitis Media compared to gram positive bacteria which constitute (39.02 %) , as shown in figure (1).



Figure(1) The percentage of Gram negative and Grams positive bacteria among patients with otitis media.

Pathogenicity of bacteria in otitis Media.

Bacteriological study of otitis media swape of patients reveals many bacterial isolates this study concerned with many types of bacteria *M. catarrhalis* and *Ps.aeruginosa*. Numbers of bacterial isolates varies with type of specimens and virulence efficacy efficacy *M. catarrhalis* forms highest rate of these isolates (21.95%) while *Ps.aeruginosa*. form (20.73%) for specimens (table 3) . Members of bacterial including *St.pneumoniae* 19.5%, *S.aureus*. 17.07%, *Klebsiella* 6.09% , *St.pyogen* 2.4%, *Proteus spp* 3.65% *Acintobacter spp* 3.65% and *E.coli* 3.65% genera characterized by their highly ability to cause enteric infection in human and the symptoms of infection appears with certain days as a results of their toxins activity (McFadden , 2000) . *M. catarrhalis* infections are encountered more often than in past in ear infection, such as in Kufa covernorate AL-Dahhan,(2001)

This propably due to bacterium antibiotic resistance properties, and they are commensals of mucosal surfaces of upper respiratory tract. This bacteria occasionally is causative of opportunistic infection when the patient uses corticosteroid or immune suppressive.

Table 2.Distribution of Bacterial isolates from patients with otitis media according to the isolates.

Bacterial types	Singale isolates	Mixed isolates	Total isolates %
G+ve			
<i>St.pyogens</i>	1	1	2(2.4%)
<i>St.pneumoniae</i>	0	16	16(19.5%)
<i>S.aureus</i>	1	13	14(17.07%)
Total	2	30	32(39.02%)
G-ve			
<i>M. catarrhalis</i>	9	9	18(21.95%)
<i>Ps.aeruginosa</i>	9	8	17(20.73%)
<i>K. pneumonia</i>	1	4	5(6.09%)
<i>H.influenzae</i>	0	1	1(1.21%)
<i>Proteus spp</i>	0	3	3(3.65%)
<i>Acintobacter spp</i>	2	1	3(3.65%)
<i>E.coli</i>	0	3	3(3.65%)
Total	21	29	50(60.97%)
Total	23	58	82(100%)

The mixed bacterial type 30 were related to tow different genus and species as shown in tabale (2).This finding agrees with Ibekwe *et al.*, (1997) who found that anaerobes represent about 0.9%of all isolate

Table 2. Type of Bacterial isolates from Mixed growth

MIXED GROWTH BACTERIAL ISOLATES	NO.
<i>S.aureus + St.pneumoniae</i>	12
<i>M. catarrhalis +St.pneumoniae</i>	3
<i>M. catarrhalis + Ps.aeruginosa</i>	2
<i>Ps.aeruginosa + K. pneumonia</i>	2
<i>Ps.aeruginosa + Proteus spp</i>	2
<i>Ps.aeruginosa + St.pneumoniae</i>	1
<i>Ps.aeruginosa + E.coli</i>	1
<i>M. catarrhalis + S.aureus</i>	1
<i>M. catarrhalis + Proteus spp</i>	1
<i>M. catarrhalis + K. pneumonia</i>	1
<i>E.coli + K. pneumonia</i>	1
<i>M. catarrhalis + E.coli</i>	1
<i>H.influenzae + Acintobacter spp + St.pyogens</i>	1
Total	30

Fungal Isolate from Otitis Media.

The results obtained from the morphological and cultural characterization of the fungal isolates from the otitismedia samples revealed the presence of *Aspergillus flavus* (24.74%), *A. fumigatus* (22.2%) , *Penicillium* spp(20.37%), *A. niger* (16.6%), *A. terreus* 12.9%)and *Alternaria alternate*.(3.7%)(Table 3), Fungal species with the highestfrequency was *Aspergillus* spp. while the fungi with thelowest percentage were *Alternaria alternat* .

In conclusion, acute otitis media (AOM) is a condition ofthe middle ear that is characterized by persistent dis-chargethrough a perforation of the tympanic membrane. Due to theperforated tympanic membrane, organisms can gain entryinto the middle ear via the external ear canal. Infection of the middle ear mucosa subsequently results in ear discharge. (Klein, (1994).

Table 3. Fungal isolates from Otitis media infected

Fungal types	No. of isolates %
<i>Aspergillus flavus</i>	13 (24.74%)
<i>A. niger</i>	9 (16.6%)
<i>A. terreus</i>	7(12.9%)
<i>A. fumigatus</i>	12(22.2%)
<i>Penicillium sp.</i>	11(20.37%)
<i>Alternaria alternate</i>	2 (3.7%)
Total	54(100%)

Age Distribution:

This study show that otitis media appears in different age from(10-60) years. However,the incidence of inflammation were increase in the<10years. Age period 11-20 showedtow high percentage of otitis media Table (4).

The results of this research also revealed that the children patients from of 1– 10 years were more susceptible to otitis media infectionthan the adults and this fact was also emphasized by thereport of Klein, (1994). However, the susceptibility of the children to otitis media is traceable to their immune systemand to the particular constitution (shorter and straight/ horizontal) eustachian tube. The study revealed that it was higher numbers of bacteria associated with otitis mediain patients than fungi and that infection washighest among the patients from 1 – 10 years age group and lowest among those of 31 and above.

Table (4) Age Distribution for Otitis media Patients.

Age group (years)	Otitis media patients
<10	19:44(31.8 %)
11-20	8: 44 (18.1 %)
21-30	5 : 44 (11.3 %)
31-40	4: 44 (9.09 %)
41-50	3 : 44 (2.27 %)
51-60	5 : 44 (6.81 %)
>60	4 : 44 (9.09 %)
Age range (years)	9-60

Sex Distribution:

In this study, the otitis media patients consisted of 28 :44 (64 %) males and 16:44 (36 %) females, figure (1).

For patients showed that male–female ratio was higher in males than in females. This finding was matched with that recorded by (ALMola *et.al*,(1998) , and AL Dulumi (2001)who mentioned that the rate of otitis media in male was higher than female for otitis media patients they indicated thate male were affected with OM more than female .

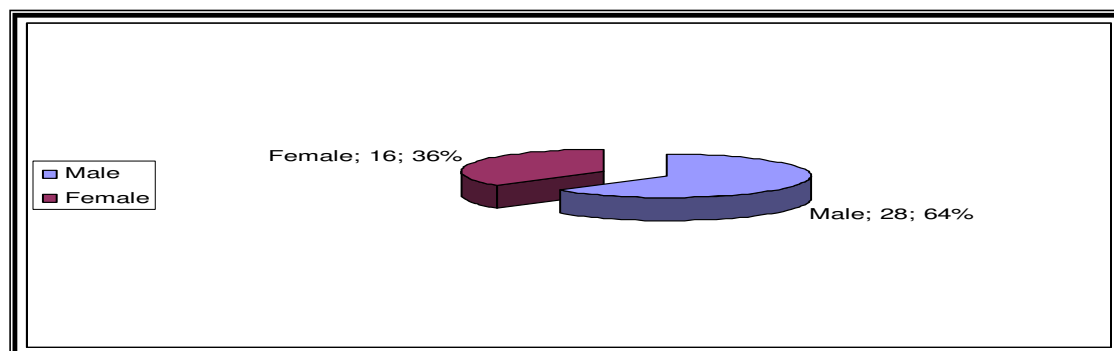


Figure (1)Sex Distribution for Otitis media patients.

References :

- 1-Ad Dahhan ,H.A. (2001) Bacteriological and Enzymatic study on patients with chronic suppurative otitis media, thesis of M.Sc.College of Science. University of Kufa.
- 2-Klein JO (1994). Otitis Media. Clin. Infect. Dis. 19: 823-33.
- 3- Richard EB, Roberts MK (1996). Otitis Media and its complication.In Nelson’s Textbook of paediatrics pp. 1814-1824.
- 4-- Macfaddin, J.F 2000. Biochemical tests for identification of medical bacteria . 3rd ed. Awolters Kluwer Company .
- 5-- Koneman E.W. ;R S,E, Oberts and G.D.;Wright(1978) . Practical Laboratory Mycology .The Wilkins Company Baltimor,USA.
- 6-Gunnsteinn HW, Peter H, Eija K (2004). Clonal similarity of salivary and nasopharyngeal *Fusobacterium nucleatum* in infants with acute otitis media experience. J. Med. Microbiol 53:

161-165.

7- AL –Mola ,G.A.; Jassim , T.M. and AL Adhami S.A. (1998). Bacteriology study of otitis media among children in saddam General Hospital(SGH) in Tikrit city .Med.J. of Tikrit University ,4108-111.

8- ALDilumi A.A.; AL Gafri ,A.H.; Naserullah ,B.A. and ALDilumi .H.H.(2002)Bacterial otitis media in Baghobh covernorate . Journal ALNafh (10).

9-Kontiokari T, Koivunen P, Niemela M, PokkaT, Uhari M (1998).Symptoms of Acute Otitis Media, Paediatr. Infect. Dis. J. 17: 676-679.

10- Brunton and Pichincheru, M.E.(2005) .Acut otitis media influence of the pcv-7 vaccin on changes in the disease and it is management .J.fam pract.

11- Ibekwe, A.O. , AL Shareef ,Z and Benaayam, A. (1997). Anaerobes and Fungi in chronic suppurative otitis media .J. Reprinted from Annals of Otology ,Rhinology , and Larynology .V106(8): 649-652.

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