DOI: https://doi.org/10.53350/pjmhs221651255

ORIGINAL ARTICLE

Medical Aspects for Risk Factors of Acute Otitis Media in Early Age Kids of Play Group, A Clinical Study

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ABSTRACT

Task: The diagnosis of acute otitis media is very common in young children. Its chronic condition may cause hearing impairment and delayed speech in young children.

Aims and Objectives: The aims and objectives of current study were to provide health awareness against risk factors of acute otitis media in our community.

Methodology: In this study total 200 children of age 1-3 years old were selected and divided them into two groups. In Group-A 100 children were with the symptoms of acute otitis media while in Group-B 100 children were those how have not acute otitis media. The study was conducted in ENT department of different medical institutes. The time duration of study was 6 month.

Results: In this study the percentage standard mean deviation of non-biological variables in table-2, for Group-A, household firewood (12.8±0.2), cigarette smoke (42.4±0.1), economic conditions (32.6±0.2), lack of medical awareness (41.1±0.1), family history (6.09±0.1), malnutrition (21.03±0.3) and Group-B, household firewood (1.08±0.1), cigarette smoke (12.1±0.1), economic conditions (2.3±0.2), lack of medical awareness (51.1±0.1), family history (4.01±0.1) and malnutrition (1.01±0.3) were respectively. While the percentage standard mean deviation of biological risk factors in table-3 for Group-A, S. pneumonia (10.2±0.1), H. influenza (12.01±0.2), Moraxella catarrhalis (9.04±0.1) and Group-B S. pneumonia (01.0±0.1), H. influenza (1.01±0.2), Moraxella catarrhalis (1.01±0.3) were measured.

Conclusion: It was concluded that household firewood, cigarette smoke, economic conditions, lack of medical awareness, family history and malnutrition were the major associated factors occurrence of acute otitis media in children. It is so important to provide health awareness against these factors in community.

Keywords: Acute otitis media, S. pneumonia, H. influenza, Moraxella catarrhalis, Tympanometry

INTRODUCTION

Acute otitis media (AOM) is a frequent infection in infants and can be a consequence of upper respiratory infections in children under one year old [1]. The symptoms and indicators of middle-ear inflammation are rapidly onset in this disease, which is marked by the presence of middle-ear effusion [3]. Younger children may show signs of acute otitis media such as fever, irritability or poor feeding if they have an earache or other symptoms that are not specific to AOM [12]. Different indications such as tympanic membrane perforation, a bulging membrane, an air-fluid level behind the membrane or an ear canal discharge can all help in diagnoses of AOM [5]. The presence or absence of a middle ear effusion can be detected via pneumatic otoscopy or tympanometry [7].

It is common for children with breathing tubes (grommets) to experience a discharge from their ears, where fluid from the middle ear drains into their ears canal. S. pneumonia, H. influenza and Moraxella catarrhalis are the common bacteria cause acute otitis media in children [6]. The diverse group of diseases covered by otitis media contain some degree of inflammation and infections in the middle ear [9]. Adhesive otitis media, acute otitis media, effusion otitis media, chronic suppurative otitis media are the cost common types of otitis media [10]. Still in Pakistan acute otitis media is considered a very simple and neglected disease. Different studies concluded that acute otitis media is a widespread disease in children all over the world [13].

Long term untreated symptoms of acute otitis media may create complications in hearing, speech and performance of children in school [14]. The relationship between otitis-prone children and their hosts and environments is reexamined. Host factors for recurrent otitis include gender predominance (males), ethnicity, birth order (second-born or siblings) etc. [19]. In addition to environmental factors such as weather, economic conditions are very important factors which effect on child's health [11]. There are several causes of ear infections, but the most common is a bacterial or viral infection that causes pain and swelling of the eardrum, as well as inflammation of the ear canal [2]. Antibiotics, analgesics, and ear tubes are all options for treatment [8]. Ear infections in children under the age of two are usually treated with antibiotics.

MATERIALS AND METHODS

Study design: Current study was clinical study and it provides health awareness about risk factors of acute otitis media and it is conducted in ENT departments of different medical institutes from October 2021 to April 2022.

Size of Sample: Total 200 children of age 1-3 years old were selected and divided them into two groups. In Group-A 100 children were with the symptoms of acute otitis media while in Group-B 100 children were those how have not acute otitis media.

Research parameters

Non- Biological: Household firewood, cigarette smoke, economic conditions, lack of medical awareness, family history and malnutrition.

Biological: Virus, Bacteria **(**S. pneumonia, H. influenza and Moraxella catarrhalis etc.**)**

Data presentation bio-statistically: Raw data presented bio-statistically through SPSS model 2018. All the parameters compared with each other by applying t- test of regression significant ($p< 0.05$). The other compassion was processed through chi- test of one way ANOVA. Results are presented through different graphs on axis.

RESULTS

Table-1:

Groups	No of individuals	Age	Male	Female	Acute otitis media
Group-A	100	1-3 y	70	30	All positive
Group-B	100	1-3 y	60	40	All negative

Table-2: Non- Biological factors

Parameters	Group-A Mean ±SD %	Group-B Mean ±SD %	P<0.05
Household firewood	12.8±0.2	1.08±0.1	0.00

Cigarette smoke	42.4±0.1	12.1±0.1	0.00
Economic conditions	32.6±0.2	2.3±0.2	0.00
Lack of medical awareness	41.1±0.1	51.1±0.1	0.00
Family history	6.09±0.1	4.01±0.1	0.00
Malnutrition.	21.03±0.3	1.01±0.3	0.00

Table-3: Biological factors

Parameters	Group-A Mean ±SD %	Group-B Mean ±SD %	P<0.05
S. pneumonia	10.2±0.1	01.0±0.1	0.00
H. influenza	12.01±0.2	1.01±0.2	0.00
Moraxella catarrhalis	9.04±0.1	1.01±0.3	0.00

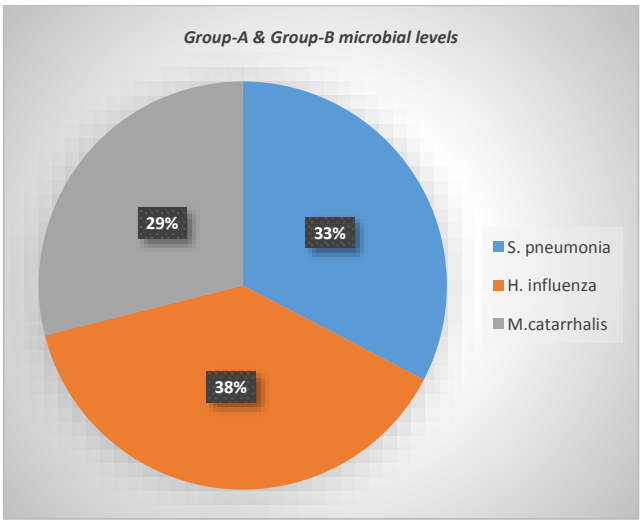

Figure-1: Percentage mean standard deviation of biological factors

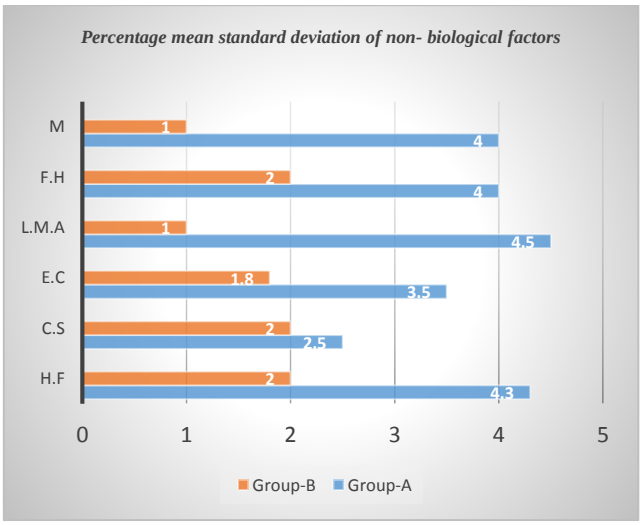

Figure-2: Percentage mean standard deviation of non- biological factors

In table-1 number of total individuals and their genders regarding indications of acute otitis media were presented. The percentage standard mean deviation of non-biological variables are in table-2, of Group-A, household firewood (12.8±0.2), cigarette smoke (42.4±0.1), economic conditions (32.6±0.2), lack of medical awareness (41.1±0.1), family history (6.09±0.1), malnutrition (21.03±0.3) and Group-B, household firewood (1.08±0.1), cigarette smoke (12.1±0.1), economic conditions (2.3±0.2), lack of medical awareness (51.1±0.1), family history (4.01±0.1) and malnutrition (1.01±0.3) were respectively. While the percentage standard mean deviation of biological risk factors in table-3 for Group-A, S. pneumonia (10.2±0.1), H. influenza (12.01±0.2), Moraxella catarrhalis (9.04±0.1) and Group-B S. pneumonia (01.0±0.1), H. influenza (1.01±0.2), Moraxella catarrhalis (1.01±0.3) were measured. The results of this study showed a significant ($p<0.05$) differences in percentage of occurrence of risk factors in both groups.

DISCUSSION

In Pakistan Epidemiological acute otitis media studies are very rare and still people consider it just a neglected disease [4]. Whereas different researchers how are working for this disease have described that it is a very common indication in our society among young children and its cases are increasing regularly. Coker et al., 2010, stated in their study that identification of excepted risk factors of acute otitis media are very essential for its proper prevention because people have not awareness about this disease [16]. In another study researchers concluded that acute otitis media spread and its treatment is only possible when medical experts will arrange heath awareness sessions with common community regularly [20].

Elemraid et al., 2011, was mentioned in his study that clinical examination of very young kids in their institutes regularly is very helpful for the control of this disease and health department of each country should select ear, nose, and throat specialists for these activities. In present study different variables were considered those are the risk factors of acute otitis media. In Pakistan 80% population live in villages and the cooking source in these areas are wood fire and its smoke is major cause of acute otitis media in teen kids [21]. Similarly majority of the men are habitual of smoking the smoke of tobacco very harmful for mother feedings children [15].

In poor countries like Pakistan the economic conditions of people are not good they live in poor life styles there hygienic conditions are very bad because of these non-hygienic conditions the chances of this disease are very high [18]. The literacy rate of Pakistan is about 15% therefore people have no any medical awareness because of no literacy rate this disease has spread in all areas. Due to poverty and unemployment parents cannot provide proper balanced diet to their kids and our mostly kids are sick because of malnutrition. Biological risk factors are mostly notorious bacterial pathogens which caused this disease [17]. Current study is significant ($p<0.05$) because a remarkable changes in both groups were concluded.

REFERENCES

1. Albersen M, Bulatovic M, Lindner SH, et al. Is a positive family history predictive for recurrent acute otitis media in children? An evidence-based case report. Otolaryngol Head Neck Surg 2010;142:31-5.
2. Anggraeni R, Carosone-Link P, Djelantik B, et al. Otitis media related hearing loss in Indonesian school children. Int J Pediatr Otorhinolaryngol 2019;125:44-50.
3. Anggraeni R, Hartanto WW, Djelantik B, et al. Otitis media in Indonesian urban and rural school children. Pediatr Infect Dis J 2014;33:1010-5.
4. Baraibar R. Incidence and risk factors of acute otitis media in children. Clin Microbiol Infect 2020;3:S13-22.
5. Brook I, Santosa G. Microbiology of chronic suppurative otitis media in children in Surabaya, Indonesia. Int J Pediatr Otorhinolaryngol 2021;31:23-8.
6. Coker TR, Chan LS, Newberry SJ, et al. Diagnosis, microbial epidemiology, and antibiotic treatment of acute otitis media in children: a systematic review. JAMA 2010;304:2161-9.
7. Da Costa JL, Navarro A, Neves JB, Martin M. Household wood and charcoal smoke increases risk of otitis media in childhood in Maputo. Int J Epidemiol 2004;33:573-8.
8. Dilger M, Orasche J, Zimmermann R, et al. Toxicity of wood smoke particles in human A549 lung epithelial cells: the role of PAHs, soot and zinc. Arch Toxicol 2016;90:3029-44.
9. Elemraid MA, Mackenzie IJ, Fraser WD, Brabin BJ. Nutritional factors in the pathogenesis of ear disease in children: a systematic review. Ann Tropl Paediatr 2009;29:85-99.

10. Elemraid MA, Mackenzie IJ, Fraser WD, et al. A case–control study of nutritional factors associated with chronic suppurative otitis media in Yemeni children. Eur J Clin Nutrit 2011;65:895- 902.
11. Esposito S, Baggi E, Bianchini S, et al. Role of vitamin D in children with respiratory tract infection. Int J Immunopathol Pharmacol 2013;26:1-13.
12. Ilechukwu G, Ilechukwu C, Ubesie A, et al. Otitis media in children: Review Article. Open J Pediatr 2014;4:47-53.
13. K-Hanquist A, Koch A, Niclasen J, Dammeye J, Lous J, Olsen SF, et al. Risk factors of early otitis media in the Danish National Birth Cohort. PLoS One 2016;11:e0166465.
14. Lieberthal AS, Carroll AE, Chonmaitree T, et al. The diagnosis and management of acute otitis media. Pediatrics 2013;131: e964-99.
15. Martines F, Salvago P, Ferrara S, et al. Factors influencing the development of otitis media among Sicilian children affected by upper respiratory tract infections. Braz J Otorhinolaryngol 2016;82:215-22.
16. Rosenfeld RM, Culpepper L, Doyle KJ, et al. Clinical practice guideline: Otitis media with effusion. Otolaryngol Head Neck Surg 2004;130:S95-118.
17. Rovers MM, de Kok IM, Schilder AG. Risk factors for otitis media: an international perspective. Int J Pediatr Otorhinolaryngol 2006;70:1251-6.
18. Simbolon A, Zahara D, Aboet A, et al. Prevalence of acute otitis media in North Sumatera Province, Indonesia. Int J Recent Innov Acad Res 2019;3:190-5.
19. Usonis V, Jackowska T, Petraitiene S, et al. Incidence of acute otitis media in children below 6 years of age seen in medical practices in five East European countries. BMC Pediatrics 2016;16:108.
20. Venekamp RP, Damoiseaux RAMJ, Schilder AGM. Acute otitis media in children. BMJ Clin Evid 2014;2014:0301.
21. Zhang Y, Xu M, Zhang J, et al. Risk factors for chronic and recurrent otitis media - A meta-analysis. PLoS One 2014;9:e86397.