

Ear, Nose and Throat (E.N.T) Diseases in Children: Patterns and Risk Factors.

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ABSTRACT:

BACKGROUND:

Ear, nose, and throat (E.N.T) diseases are common in children. Early diagnosis and proper management are essential to ensure adequate growth and development.

OBJECTIVE:

To determine patterns of E.N.T diseases in children and define risk factors affecting them.

METHODS:

A Cross-sectional study of 264 children under the age of 12 years attended E.N.T clinic/ Al-Kindy Teaching Hospital/ Baghdad from the period of 1/10/2006 to 28/2/2007. We analyzed the following data: age, gender, residence, family size, socio-economic status, parental educational level, family history of atopy, presence of smoking, state of vaccination, presence of anemia or any concomitant chronic illness, and final diagnosis. Statistical analysis was done through Chi-Square.

RESULTS:

Males outnumbered females (48.1% vs. 51.9%) ($P>0.05$). The encountered prevalent E.N.T problems included those of pharynx and tonsils (41.7%), nose (18.6%), ear (16.3%), larynx (6.8%), adenoids (6.0%), sinuses (5.3%), and miscellaneous disorders (5.3%). Overall, infections were the predominant (57.9%) followed by foreign bodies impaction (11.7%) and allergy (6.0%). Statistical analysis revealed that crowding, low socio-economic status, poor parental educational level, smoking, and anemia were statistically significant risk factors ($P<0.05$).

CONCLUSION:

Pediatricians and E.N.T specialists share a combined responsibility in managing properly the commonest pediatric E.N.T problems. Enhancement of educational and preventive programs targeting the relevant risk factors is suggested.

KEYWORDS: E.N.T diseases, children, epidemiology.

INTRODUCTION:

The health problems of children are different from those of adults and vary widely among the nations of the world. The assessment of the state of health of any community begins with a description of the incidence or prevalence of illness and continues with studies that show the changes that occur with time and in response to programs of prevention, case finding, therapy and adequate surveillance ⁽¹⁾.

Human potential is unrealized because of poor health especially cognitive impairment caused by health problems with negative effects on individuals, families, communities and countries in terms of productivity, economics and politics ⁽²⁾.

Evidences suggest that periodic health evaluations and health researches improve intermediate and long-term clinical outcomes of diseases, reduce health care expenditure, remodel drug industries and enhance delivery of recommended preventive services ^(3,4).

We, therefore, aimed in this study to identify the patterns of ear, nose and throat (E.N.T) diseases in children and define dependent risk factors influencing them.

PATIENTS AND METHODS:

The study involved 264 children under the age of 12 years who attended E.N.T clinic / Al-Kindy Teaching Hospital/ Baghdad from the period of 1st Oct. 2006 to 28th Feb. 2007. Every patient was examined properly after taking adequate history. A special questionnaire was formulated to incorporate the following variables: age, gender, residence, socio-economic state, family size, parental educational level, family history of atopy, presence of smoking, vaccination status of the child, presence of anemia or any concomitant chronic illness, and the final diagnosis. Statistical analysis of data was conducted using Chi-square. A $p\leq 0.05$ was considered statistically significant.

RESULTS:

Of 462 children included over five months study, 127 (48.1%) were males and 137 (51.9%) were females ($P>0.05$) with a male to female ratio of

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1:1.07. The mean age was 4.6 ± 3.9 years. (table-1).

Table-2 shows the distribution of E.N.T problems in the studied patients. In a descending order, the distribution included those of pharynx and tonsils 110 (41.7%), nose 49 (18.6%), ear 43 (16.3%), larynx 18 (6.8%), adenoids 16 (6.0%), sinuses 14 (5.3%), and miscellaneous disorders 14 (5.3%). Overall, infections were the predominant 153 (57.9%) followed by foreign bodies impaction 30 (11.7%), and allergy 16 (6.0%). Concomitant chronic illnesses as cerebral palsy and celiac disease were seen in 2 (0.8 %) patients.

Table-3 demonstrates the statistical significances of certain variables in the studied patients. Big family size, low socio-economic status, poor parental educational level, smoking, and anemia were statistically significant risk factors ($p < 0.05$) while residence, family history of atopy, and vaccination status were noticed to be independent risk factors ($p > 0.05$).

DISCUSSION:

Otorhinolaryngologic disorders still represent an important cause of morbidity and mortality. In USA, the overall mortality rate caused by otorhinolaryngologic causes was estimated to be 0.28 per 100,000 population. Eighty percent of deaths occurred because of airway compromise caused by infections, anatomic obstruction or congenital anomaly. The remaining 19% of deaths occurred because of aspiration, non-airway infections, and malignant neoplasm⁽⁵⁾.

The study showed that the prevalent E.N.T problems in a descending order included those of pharynx and tonsils (41.7%), nose (18.6%), ear (16.3%), larynx (6.8%), adenoids (6.0%), sinuses (5.3%), and miscellaneous disorders (5.3%) (table-2).

Generally speaking, infections were the predominant (57.9%) in terms of acute pharyngotonsillitis, chronic tonsillitis, acute otitis media, chronic suppurative otitis media and croup. Acute pharyngotonsillitis is a common and serious problem in children not because it's a focus for spreading infection to the neighboring structures as ear, nose, sinuses, and meninges but because it's also a potential cause for remote complications as glomerulonephritis and rheumatic fever⁽⁶⁾. Acute and chronic suppurative otitis media is the most prevalent disease of children after respiratory infections⁽⁷⁾. Correct diagnosis and treatment are essential because significant persistent middle ear effusion can follow that may cause significant conductive hearing loss which may adversely affect speech, language and psychosocial

development and quality of life^(8,9). Croup is an important cause of upper air way obstruction in children. Being of viral etiology, it has a seasonal variation with most cases occurred under the age of 4 years. It represents an important cause of admission to the emergency departments⁽¹⁰⁾.

Impacted foreign bodies in the nose, ear, and larynx (11.7%) were the second common pathology in the studied patients. The majority of patients were younger than four years of age. Such children are often curious, put virtually anything into these potential orifices and frequently out of sights of mothers. Moreover; disturbed home environment and child neglect are well-known predisposing factors⁽¹¹⁻¹³⁾. The discovered foreign bodies were safety pins, beans, beads, pieces of sponge, and alkaline batteries. They were removed successfully without any sequelae.

Allergic pathology (6.0%) ranked the third in the studied patients. Allergic rhinitis was the commonest diagnosis. Though it's not life threatening condition, it's a significant problem in terms of morbidity and health care costs, impeding education within class room, limiting outdoor or indoor activity and predisposing to the development of sinusitis, otitis media and asthma^(14,15).

Adenoid hypertrophy constituted 6.0% in the studied patients. Such lymphoid tissue fills the vault of the nasopharynx, interferes with the passage of air through the nose, obstructs the Eustachian tube and blocks the clearance of mucus. The end result will be persistent mouth breathing, snoring, obstructive sleep apnea, recurrent otitis media, and disturbed school performance^(16,17).

Sinusitis represented 5.3 % in the studied patients. Factors that impair mucociliary transport may increase the risk of sinusitis and include cigarette smoking exposure, cold and dry inspired air, viral URTI, allergic rhinitis, and swimming together with factors causing nasal obstruction like foreign bodies, polyp, enlarged adenoids, septal deviation, tumors, and trauma⁽¹⁸⁾.

Epistaxis was recorded in 2.3% of studied patients with the most bleeding occurred in area of Kiesselbach's plexus, an area in the anterior septum where vessels from both the internal and external carotid arteries converge. Common causes of nosebleed include digital trauma, foreign bodies, dry air, URTI, and allergic rhinitis. Most nosebleeds stop spontaneously or with nares compress, however; some requires nasal packs⁽¹⁹⁾. Epistaxis was found to account 2.9 % of E.N.T load in Nigeria during 1999- 2003 with 73.3% of patients presented in the emergency ward as acute

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bleeding while 26.7% presented in E.N.T clinic as chronic or recurrent bleeding with a trauma being the major identified cause⁽²⁰⁾

Deafness was reported in 1.1% of studied patients. Most patients were younger than 4 yrs. of age. Such low percentage can be attributed technical difficulties where audiometry unit in the Al-Kindy Teaching Hospital deals only with hearing impairment in those older than 4 yrs. of age. Because hearing impairment can have a major impact on the acquisition of speech and language skills⁽²¹⁾, and because the early the impairment is identified the better prognosis, early identification through screening programs is widely and strongly advocated⁽²²⁾

Chronic concomitant illnesses were reported in 2 (0.8%) patients, namely cerebral palsy and celiac disease. The presence of chronic illness will increase the propensity to have concomitant health problems particularly infections⁽²³⁾. However; certain chronic illnesses have peculiar E.N.T problems⁽²⁴⁻²⁶⁾.

Statistical analysis of the data revealed that big family size, low socio-economic status, poor parental educational level, smoking, and anemia were statistically significant risk factors ($p < 0.05$) (table -3). Overcrowding and poor housing conditions are associated with increasing morbidity and mortality from common diseases during adulthood⁽²⁷⁾. Socio-economic status is considered an important risk factor affecting child's health as better status implies better hygiene, standard of

living, dietary habits, educational level and hence, better health⁽²⁸⁾. The role of parental education in providing better care of children in terms of supervision, discipline, nutrition and their role in primary prevention and decrease morbidity is well-emphasized⁽²⁹⁾. Environmental tobacco smoke is an important respiratory tract irritant in young children. Children with lower socio-economic standard and exposed to household smoking have increased risk of respiratory diseases⁽³⁰⁾. Therefore, agenda to control smoking in the community is needed. Anemia and malnutrition including calories and micronutrients deprivation, cause acute and chronic morbidity, contribute to reduced immunity and increase the likelihood of mortality and morbidity in association with infectious diseases⁽³¹⁾.

On the other hand, age, gender, residence, family history of atopy and vaccination status were found to be independent risk factors ($p > 0.05$). Many studies demonstrated the contribution of urbanization⁽³²⁾, family history of atopy⁽³³⁾, and poor vaccination status⁽³⁴⁾ in increasing the tendency to catch health problems especially infections.

CONCLUSION:

pediatricians and E.N.T specialists carry a combined responsibility in managing properly the commonest pediatric E.N.T problems. Moreover; encouraging educational and preventive programs focusing on the dependent risk factors are of prime importance.

Table-1: Age and gender distribution of the studied patients.

Age groups (yrs.)	Male		Female		Total	
	No.	%	No.	%	No.	%
< 4	27	10.2	31	11.7	58	21.9
4- 8	56	21.2	73	27.7	129	48.9
>8	44	16.7	33	12.5	77	29.2
Total	127	48.1	137	51.9	264	100

$P = 3.68$, D.F = 2, $P > 0.05$

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Table-2: Distribution of E.N.T diseases in the studied patients.

Category	Diagnosis	No. (%)	Total No. (%)
Tonsils and pharynx	Acute pharyngotonsillitis	72 (27.3)	110 (41.7)
	Chronic tonsillitis	38 (14.4)	
Nose	Foreign bodies	23 (8.7)	49 (18.6)
	Allergic rhinitis	16 (6.1)	
	Epistaxis	6 (2.3)	
	Fracture	3 (1.1)	
	Polyp	1 (0.4)	
Ear	Acute otitis media	14 (5.3)	43 (16.3)
	Chronic suppurative otitis media	13 (4.9)	
	Foreign bodies	7 (2.7)	
	Wax	6 (2.3)	
	Deafness	3 (1.1)	
Larynx	Croup	17 (6.4)	18 (6.8)
	Foreign bodies	1 (0.4)	
Adenoid	Adenoid hypertrophy	16 (6.0)	16 (6.0)
Sinuses	Acute sinusitis	8 (3.0)	14 (5.3)
	Chronic sinusitis	6 (2.3)	
Miscellaneous			14 (5.3)
Total			264(100)

Infections=153 (57.9%), foreign bodies = 30 (11.7%), allergy= 16 (6.0%)

Table- 3: Statistical analysis of various variables in the studied patients.

Variable	Tonsils & pharynx	Nose	Ear	Larynx	Adenoids	Sinuses	Miscellaneous	Total	P value
	No.(%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	
Residence									
Rural	60 (22.8)	29 (11.0)	19 (7.2)	9 (3.4)	6 (2.3)	8 (3.0)	4 (1.6)	135 (51.1)	P= 7.13
Urban	50 (18.9)	20 (7.6)	24 (9.1)	9 (3.4)	10 (3.7)	6 (2.3)	10 (3.7)	129 (48.9)	D.F= 6
Total	110(41.7)	49 (18.6)	43 (16.3)	18 (16.8)	16 (6.0)	14 (5.3)	14 (5.3)	264 (100)	P>0.05
Family size									
< Four	25 (9.5)	19 (7.2)	15 (5.7)	5 (1.9)	4 (1.6)	2 (0.8)	8 (3.0)	78 (29.6)	P= 23.32
Four- eight	56 (21.2)	13 (4.9)	13 (4.9)	7 (2.6)	5 (1.9)	6 (2.3)	0 (0)	100 (37.8)	D.F= 12
> Eight	29 (11.0)	17 (6.5)	15 (5.7)	6 (2.3)	7 (2.6)	6 (2.3)	6 (2.3)	86 (32.6)	P<0.05
Total	110(41.7)	49 (18.6)	43 (16.3)	18 (16.8)	16 (6.0)	14 (5.3)	14 (5.3)	264 (100)	
Socioeconomic status									
Low	53 (20.1)	18 (6.8)	15 (5.7)	7 (2.6)	6 (2.3)	0 (0)	4 (1.6)	103 (39.0)	P= 23.28
Medium	27 (10.2)	11 (4.2)	15 (5.7)	2 (0.8)	7 (2.6)	8 (3.0)	3 (1.1)	73 (27.7)	D.F= 12
High	30 (11.4)	20 (7.6)	13 (4.9)	9 (3.4)	3 (1.1)	6 (2.3)	7 (2.6)	88 (33.3)	P<0.05
Total	110(41.7)	49 (18.6)	43 (16.3)	18 (16.8)	16 (6.0)	14 (5.3)	14 (5.3)	264 (100)	
Parental education									
Illiterate	45 (17.1)	28 (10.6)	23 (8.7)	7 (2.6)	10 (3.7)	2 (0.8)	9 (3.4)	124 (47.0)	P= 14.03
Educated	65 (24.6)	21 (8.0)	20 (7.6)	11 (4.2)	6 (2.3)	12 (4.5)	5 (1.9)	140 (53.0)	D.F= 6
Total	110(41.7)	49 (18.6)	43 (16.3)	18 (16.8)	16 (6.0)	14 (5.3)	14 (5.3)	264 (100)	P<0.05

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Family history of atopy									
Yes	61 (23.1)	16 (6.1)	24 (9.1)	11 (4.2)	7 (2.6)	9 (3.4)	6 (2.3)	134 (50.8)	P=10.49
No	49 (18.6)	33 (12.5)	19 (7.2)	7 (2.6)	9 (3.4)	5 (1.9)	8 (3.0)	130 (49.2)	D.F= 6
Total	110(41.7)	49 (18.6)	43 (16.3)	18 (16.8)	16 (6.0)	14 (5.3)	14 (5.3)	264 (100)	P>0.05
Smoking									
Yes	54 (20.5)	19 (7.2)	28 (10.6)	14 (5.3)	8 (3.0)	5 (1.9)	8 (3.0)	136 (51.5)	P=13.08
No	56 (21.2)	30 (11.4)	15 (5.7)	4 (1.5)	8 (3.0)	9 (3.4)	6 (2.3)	128 (48.5)	D.F= 6
Total	110(41.7)	49 (18.6)	43 (16.3)	18 (16.8)	16 (6.0)	14 (5.3)	14 (5.3)	264 (100)	P<0.05
Vaccination status									
Complete	49 (18.6)	19 (7.2)	20 (7.6)	13 (4.9)	7 (2.6)	9 (3.4)	10 (3.7)	127 (48.1)	P= 9.91
No/Partial	61 (23.1)	30 (11.4)	23 (8.7)	5 (1.9)	9 (3.4)	5 (1.9)	4 (1.6)	137 (51.9)	D.F= 6
Total	110(41.7)	49 (18.6)	43 (16.3)	18 (16.8)	16 (6.0)	14 (5.3)	14 (5.3)	264 (100)	P>0.05
Anemia									
Yes	62 (23.5)	28 (10.6)	16 (6.0)	9 (3.4)	13 (4.9)	5 (1.9)	5 (1.9)	138 (52.3)	P= 13.52
No	48 (18.2)	21 (8.0)	27 (10.3)	9 (3.4)	3 (1.1)	9 (3.4)	9 (3.4)	126 (47.7)	D.F= 6
Total	110(41.7)	49 (18.6)	43 (16.3)	18 (16.8)	16 (6.0)	14 (5.3)	14 (5.3)	264 (100)	P<0.05

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