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Parental Smoking and Risk of Otitis Media with Effusion among Children

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ABSTRACT

***Background**: Serous otitis is due to eustachian tube dysfunction and accumulation of fluid in the middle ear cavity. Otitis media with effusion (OME) is common among children and can cause hearing loss. Smoking is a common predisposing factor of this condition. The present study was conducted with the aim of determining the effects of smoking on the prevalence of OME among children residing in urban area of Tehran between 1996 and 1998.*

***Materials and Methods:** This cross-sectional study performed on 3833 pre-school and school-aged children which their age ranged from 2 to 11 years. Children were examined with pneumatic otoscope and tympanometry was performed; meanwhile, their parents were asked to complete a questionnaire.*

***Results:** The incidence of OME was 9.1% and 14.1% in pre-school and school-aged children; respectively, and was higher among children with smoker parents.*

Conclusion:** Parental smoking is a preventable predisposing factor for OME; meanwhile, there are significant statistical differences between healthy and sick children regarding their parents pack-years smoking.* ***(Tanaffos 2002;1(3): 25-28)

***Key words**: Parental smoking, Otitis media, Children, Otitis media with effusion.*

INTRODUCTION

Otitis serousa is defined as accumulation of non-supporative liquid in the middle ear cavity. This problem occurred because of eustachian tube dysfunction as well as other problems in the middle ear ventilation. Twenty to fifty percent of children aged 3-10 years experience otitis serousa at least once in this period (1,2). Hearing loss of 30-40 db is a common complication among these patients.

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Vague presentations of otitis media in early stages and coincidence of the disease with the time of learning and speaking of the child cause many problems such as stuttering, delay of speaking, indifference of children at school, and educational problems.

Unfortunately, all of them are considered as childish pertinacity by their parents and early diagnosis hindered (1,2,3). Passive smoking causes upper respiratory infections as well as eustachian tube and mucocilliary dysfunction. Eustachian tube contributes to prepare negative pressure in middle ear

and its malfunction is associated with increased risk of otitis serousa among children of smoker parents.

MATERIALS AND METHODS

In this cross- sectional study 1833 children whose age ranged from two to six years were selected from 40 nurseries through multi-stage randomized sampling .Two thousand children between 7 and 11 years old were chosen among 20 primary schools by simple randomized sampling. The fields of study were located in north and south districts of Tehran. Following the clinical examination with pneumatic otoscope, tympanometry was performed and the questionnaires were filled out by the parents. Children were considered to have otitis serousa in case of:

- Lack of cerumen in their ears
- Intact tympanic membrane
- Type B or C of tympanogram
- No retraction of tympanic membrane/ or disappearance of cone of light/or presence of air-fluid level in examination.

There were healthy children matched to the case group as the control subjects.

RESULTS

The prevalence of otitis serousa of middle ear among preschool and school-aged children was 9.1% and 14.1%, respectively (Table.1).

Odds ratio of parental smoking among pre-school aged and school-aged children was 1.77 (95% CI= 1.63 – 2.96) and 2.2 respectively.

Table 1. Association between parent's smoking and prevalence of OME in pre-school and school-aged children.

Groups	Parental smoking status	OME(+) (%)	OME(–) (%)
Preschool-aged	positive	65(39)	440 (27)
	negative	102(61)	1226(73)
School-aged	positive	178(63)	746(43)
	negative	105(37)	971(57)

Different smoking patterns among parents in pre-school children was shown in Table 2. As shown, 61% of affected children had non-smoker parents. The average length of parental smoking was 0.5±0.7 and 0.3±0.6 pack-years among pre-school-aged and school-aged children, respectively, while the difference was statistically significant ($p< 0.002$).

Table 2. Parent's smoking rate among pre-school aged group

PK*	OME (+)	OME(-)
0	102	1226
PK< 10	43	340
10< PK < 20	20	77
20 < PK < 30	2	17
PK> 30	0	6

* PK= Pack Years

Our findings have implied significant correlation between parental smoking and incidence of OME among children.

DISCUSSION

Various studies with different designs relating to middle ear disease among young children have a point of consistence in suggesting a modest increase in the risk associated with parental smoking (1,2,5). Hinton et al. demonstrated that parental smoking is an influential factor in OME among the children. They require more ventilation tube insertion for OME treatment, comparing with other patients with the same age (4). This indicates the resistance of OME to suitable therapeutic modalities.

Green et al. showed the increased risk of OME in case of parental smoking especially with maternal smoking during pregnancy (6). Moreover, Etzel et al. have presented cigarette smoking as an effective factor in extension of the disease period and increasing the frequency of the disease attacks at shorter intervals (7). Their results are similar to our findings on parental smoking, since both studies indicate increased risk of OME among children with smoker parents. Furthermore, a direct relation exists

between pack-years cigarette smoking of parents and the prevalence of the disease.

Finally, we believe that passive smoking is a preventable cause of otitis media with effusion in children. This seeks further parental attention.

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