

## ORIGINAL ARTICLE

# Assessment of the Relation between Pediatrics Lymphohematopoietic Cancers and Cigarette Smoking Parents

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### ABSTRACT

*There is a little evidence about effect of smoking on the incidence of childhood cancers. The aim of this study was to evaluate the association between exposure to passive and active smoking and incidence of childhood lymphohematopoietic cancers. This case-control study was done on 106 children with lymphohematopoietic cancer (case) and 110 healthy children (controls) aged from 1-16 years in Guilan University of medical sciences in 2011. Factors such as proportion of smoking of father, mother and other close family members before and during pregnancy and after birth of the child were compared among the two study groups. The information was gathered by a validated questionnaire and direct interview with parents. SPSS 20 was used for data analysis. Acute lymphoblastic leukemia (ALL) was the most common (65.1%) cancer among children. the mean age of children in case and control groups was  $8.9 \pm 3.7$  and  $7.6 \pm 3.6$ , respectively.*

*Cigarette consumption in the family members was higher in case group (42.5%) compared to control group (30%) (OR=1.72, CI: %95, 1.24-3.01). Significant difference was seen between cigarette smoking of father and cancer incidence during childhood (OR=1.8, CI: %95, 1.02-3.01). History of cigarette consumption was significantly higher in case group in prenatal (OR = 3.88, CI: %95, 2.03-7.40).*

*No significant differences were seen between maternal passive smoking during pregnancy and childhood cancers. The cigarette smoking especially in fathers has a significant effect on pediatrics lymphohematopoietic cancers incidence. Preventive and educational programs should be done to limit the cigarette smoking of young people.*

*Key words: Cancer, Cigarette, Children, mother, father, family*

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### INTRODUCTION

Childhood cancers are rare diseases among children. Annual incidence is 16.5 cases per 100 thousand, i.e. about 1% of all new cancer cases in the United States. Average rates from cancer in childhood and adolescence is much higher than that in the neonatal period. Overall, about 40 percent of the total Lanphohemaoetic cancers, central nervous system tumors in about 30% and about 10% of malignant sarcoma and malignant occur in children.

Children's contact with smoke of cigarette is one of the health problems that are associated with an increased risk of mortality and morbidity. The cigarette smoke not only is harmful for the smoker, but also it is harmful to the people around him including children who might be affected to different of diseases and consequences resulted from them. Tobacco in cigarettes contains more than 60 carcinogens and it has been identified as a risk factor for cancer. Researchers agree that smoking during pregnancy increases the risk of childhood cancer while some studies have no idea about this. Previous studies have shown that consumption of more than five packs of cigarettes a year, by the father, might causes the child to be at risk for leukemia.

Parental smoking can also increase the risk of brain cancer or cancers of central nervous system, kidneys, eyes, lungs and bone malignant tumor in children.

Even though numerous studies have pointed to increase risk of cancer before, during and after pregnancy by smoking parents for children but some studies have shown that these variables are not related;

With regard to cancer which is the second cause of deaths in children and on the other hand the children's disease at these ages causes direct and indirect financial costs to the family and community; it creates some psychological- mental problems for the family in which the child is affected (5) and his family's future is seriously challenged, the need to prevent and avoid it is in the first stage and the accurate diagnosis and treatment are set in the next states. According to the role of smoking in causing cancer has

been accepted and agreed by all, but passive smoke exposure and its effects on carcinogenesis, especially among children, there isn't certain general consensus. Therefore this study was conducted the effect of parents passive and active smoking on the incidence of lymphohematopoietic cancers among children.

## MATERIAL AND METHODS

This case-control study was done by using the data bank of the lymphohematopoietic cancer patients (including Hodgkin and non-Hodgkin's lymphomas and leukemia, including acute myeloid and lymphoblastic leukemia which is Available at Health Department Cancer Registry Center, Guilan University of Medical Sciences) for selecting case group patients and patrons of rural and urban health centers in Rasht city for selecting control group.

After preparing the list of children with cancer, it attempted to contact their parents and after obtaining the consent of their explanations for the inclusion in study, a direct interview was done by use of a validated questionnaire. Children Parents were asked about their experiences of smoking in order to collect information about proportion of smoking of father, mother and other close family members of two groups before and during pregnancy and after birth.

This study was confirmed by ethical committee of the Guilan University of Medical Sciences. The SPSS version 20 was employed to analyze the data. Regression analysis student t-test and Odds Ratio was used to compare case and control study groups. A P-value of < 0.05 was considered statistically significant. Categorical variables were reported as percentages. Continuous variable was expressed as means and standard deviations.

## RESULTS

Totally 106 patients with lymphohematopoietic cancer (including acute lymphoblastic leukemia (65.1%), Hodgkin lymphoma (0.4%), non-Hodgkin lymphoma (6.6.5), leukemia (9.4%), and acute Myeloblastic lymphoma (8.5%)) and 110 normal children participated in this study.

Majority of patients (n=69, 65.1%) suffered from acute lymphoblastic leukemia (ALL) and Hodgkin's lymphoma (n=11, 10.4 %) was the second common cancer. Most of children (n=60, 56.6%) in case group were boys. The mean age of the children in case and control groups were  $3.74 \pm 8.93$  and  $3.08 \pm 7.62$  years respectively. There was no significant statistical difference between the age of the case and control participants. Average cigarette consumption among the family members in the case and control group were respectively,  $12.2 \pm 4.9$  and  $7.59 \pm 3.6$  Pack per Year ( $P < 0.001$ ). Cigarette consumption in the family members was significantly higher in case group (42.5%) compared to control group (30%) ( $p = 0.039$ ) and the odds ratio for cigarette consumption in the family members of cancer children was 1.72(CI: %95, 1.24-3.01). There was no significant difference between cigarette consumption of mothers or other family members(except father) and incidence of cancer in children but significant difference was seen between cigarette smoking of father and cancer incidence during childhood (OR=1.8, CI:%95, 1.02-3.01).

In the families of 44 patients (41.5%) of the children with cancer and 17 persons (15.5%) of the healthy control group, a history of cigarette consumption in prenatal existed that this difference was significant ( $P < 0.001$ ), (OR = 3.88, CI: %95, 2.03-7.40).

There was no significant relation between the two groups about the history of passive contact of mother with smokes during pregnancy.

Significant difference was observed statically between the girls and the use of cigarette by the family members of both groups ( $p = 0.018$ ). By using logistic regression test (Negative Binominal Test) it was found that although smoking by the father has a significant relationship, but its relationship with before birth is stronger (OR = 16.18, CI:%95).

Table 1: the relation between cigarette smokings of family member with cancer incidence among children

Cigarette smoking (C.S)	Case N (%)	Control N (%)	p-value
Means of C.S	12.2±4.9	7.59±3.6	<0.01
Before birth	44 (41.5%)	17 ((15.6%)	<0.001
Passive contact of mother with smoke during pregnancy	37(34.9%)	27(24.5%)	>0.05
C.S in family members of boys with cancer	23(38.3%)	21(22.9%)	>0.05
C.S in family members of girls with cancer	22(47.8%)	12(25%)	<0.05

**DISCUSSION**

In this study we considered the relation between Pediatrics lymphohematopoietic Cancers and cigarette smoking in their family members. Our data showed that the cigarette smoking specially in fathers have a significant effect on pediatrics lymphohematopoietic cancers incidence.

Previous studies have also shown that the secondary contact of child during the early years of lifetime with the smoke has no relation with the risk of brain cancer; while some researchers believe that the environment pollutions resulted from cigarettes smoking during the childhood has relation with the occurrence of cancer. A previous study showed that increased depending on parental smoking increases risk of cancer. So that the use of more than 20 packs of cigarettes over the year by parents, increases the risk of childhood cancer by 1.1 times. Other researchers also believe that mothers who consume more than 10 cigarettes per day, their children are 1.3 times more at risk of cancer.

Given the association between paternal smoking before and during pregnancy with cancer by father, the health centers and the media can inform and alert parents to the extent possible to prevent the occurrence of cancer in children. It is possible to achieve healthy children when parents stop smoking. Also it is suggested to the pregnant women to avoid possible contact with smokers.

The level of cigarette consumption by families of children with cancer and healthy children were respectively 42.5 and 30% (OR: 1.72,  $p = 0.039$ ) which is in consistent compared to the results of the other studies are. In a recent study was found that by increase of the cigarettes consuming, the risk of leukemia incidence increases and in our study also the level of consuming cigarette in the children with was significantly higher than control group.

A significant difference was observed between the history of prenatal cigarette consumption with cancer between the two groups (OR: 3.88,  $p < 0.001$ ) while there were not significant differences between the two groups in terms of previous exposure to passive cigarette smoking during the pregnancy. These results are not consistent with previous studies about mother's contact with smoke or smoking during pregnancy as a factor (even poorly) for incidence of malignancy in children. Also according to available data regarding the risk of getting cancer and cigarette use by family members, there is a statistically significant relationship with the child's gender so girls are more sensitive to exposure to cigarette smoke and have higher risk of being affected by cancer. Due to the low sample sizes in this study, it is recommended that broader studies and multi centers with a greater sample size and also by considering other factors (such as birth weight, alcohol consumption, exposure to other chemicals, etc.) to be done in order to review the etiology of childhood cancers.

The present study shows that smoking by family members (especially by fathers) during prenatal and also during the childhood in the experimental group is more than the control group and there was statistically significant differences. So we know that smoking can be considered as a significant factor and cause for creation of cancers of childhood era, notices and information required to young couples before marriage or even younger ages should be provided in this regard.

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