THE EFFECT OF PRENATAL FACTORS ON THE DEVELOPMENT OF RECTAL CANCER

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ABSTRACT

• ***Objective:*** *This trial is designed to investigate the effects of some prenatal factors on rectal cancer risk. Particularly, investigation of the effect of advanced parent age on rectal cancer development risk, as in some other cancer types, was targeted.*

• ***Material and Method:*** *For this purpose, prenatal factors including the mother and father age at the time of birth, the smoking history of the parent, and some environmental factors were questioned through a survey and the results were compared between the patients (n: 45) and the control group (n: 90).*

• ***Results:*** *There was no statistically significant difference between the patients with rectum cancer and the control group with respect to age, gender, education, monthly earnings, mean height, weight, BMI values, smoking habit, menarche, menopause, consumption of milk, milk products, bread, cereals, meat and egg, tea, alcohol and fat content of the meals. While the mean mother age at birth was 28.5±7.42 in patients, it was 25.3±5.83 in the controls.*

The difference was statistically significant ($p<0.05$). The mean father age at birth was 32.4±8.85 in patients, it was 28.1±6.67 in the controls. The difference was statistically significant ($p<0.005$). According to coffee drinking habit the difference was statistically significant ($p=0.037$).

• ***Conclusion:*** *The rectum cancer patient compared healthy group consumed less coffee and had advanced parental age. So that coffee intake and young parent age may lower the risk of rectal cancer but more comprehensive studies are needed.*

• ***Key Words:*** *Parental age, rectal cancer, coffee.* ***Nobel Med 2009; 5(3): 70-73***

ÖZET

PRENATAL FAKTÖRLERİN REKTAL KANSER GELİŞİMİ ÜZERİNE ETKİLERİ

• **Amaç:** Bu çalışma prenatal faktörlerin rektum kanseri üzerine etkilerini değerlendirmek üzere dizayn edildi. Bazı diğer kanser tipleri gibi özellikler ileri ebeveyn yaşı dikkate alındı.

• **Materyal ve Metod:** Hasta ve kontrol grubu; doğumda anne ve baba yaşı, anne ve babanın sigara içme alışkanlığı ve bazı çevresel faktörler açısından sorgulandı. Hasta sayısı 45, kontrol grubu 90 kişi idi. Sonuçlar karşılaştırıldı.

• **Bulgular:** Hasta ve kontrol gruplarında demografik parametreler, koroner kalp hastalığı risk faktörleri benzerdi. PAH olan hasta ve sağlıklı kontrol gruplarında bazal diyastolik zirve ve ortalama akım velositeleri benzerdi (sırasıyla p=0,56 ve p=0,69). Hiperemik diyastolik zirve ve ortalama akım velositeleri hasta grubunda kontrol grubuna oranla belirgin olarak düşük bulundu (sırasıyla 45,64±14,21 cm/s vs 73,08±29,61 cm/s p<0,01 ve 35,68±10,83 cm/s vs 54,31±22,28 cm/s p<0,01). CFR, hasta grubunda 1,49±0,36 iken kontrol grubunda 2,51±0,74'tü (p<0,01). PAH olan grupta IMK belirgin olarak artmıştı (p<0,01). Aortik strain ve distensibilitenin PAH olanlarda bozulmuş olduğu saptandı (p<0,01).

• **Sonuç:** Rektum kanserli hastalar kontrol grubu ile karşılaştırıldığında daha az kahve tüketiyordu ve daha ileri ebeveyn yaşına sahipti. Daha genç yaşta ebeveyne sahip olmak ve kahve tüketimi rektum kanserinden koruyucu faktörler olabilir, ancak daha geniş çaplı çalışmalara ihtiyaç vardır.

• **Anahtar Kelimeler:** Ebeveyn yaşı, rektum kanseri, kahve. **Nobel Med 2009; 5(3): 70-73**

INTRODUCTION

The effect of certain prenatal factors on the overall health of infants has been investigated for a long time. Advanced parental age, as one of the prenatal factors, is theoretically considered to predispose some diseases to the fetus. The best known correlation involves the relationship between advanced maternal age and having a child with Down syndrome. An increase in the risk of developing ALL or AML has been reported in children with mothers of advanced age in some limited studies. Similarly, an increased risk of retinoblastoma and breast cancer among children with elderly fathers has been reported in some studies.[1,2] In the current study, we compared the prenatal factors of patients with rectal cancer and healthy controls. We aimed to determine the effect of maternal and paternal age at the time of delivery, in addition to the smoking habits, family histories of cancer, levels of education, family structures, and the economic status of the patients with rectal cancer and a healthy control group on the development of rectal cancer.

MATERIAL and METHOD

In this trial, 45 patients diagnosed with rectal cancer, who presented to Karadeniz Technical University Medical Faculty Farabi Hospital Medical Oncology Outpatient Clinic between March 2007 and July 2008 or were hospitalized at the Medical Oncology Department between these time points, and 90 controls were enrolled. The exact diagnosis and the date of diagnosis were determined based on their pathology report. For this purpose, prenatal factors including the mother and father age at the time of birth, the smoking history of the mother and father, and some environmental factors were questioned through a survey and the results were compared between the patients and the control group, thereby evaluating the potential effects of prenatal factors on rectal cancer development. Respect to status of education, groups were classified as no education, primary education, and high school-university. Respect to monthly earnings, groups were classified as minimum wage, up to the twice minimum wage, and more than twice minimum wage. Respect to coffee comsuption, groups were classified as never is less than one cup in a month, seldom is up to three cups in a week, and moderate+frequent is more than three cups in a week. This study was approved by the institutional ethics committee and informed consent were taken from the patients and controls.

Statistical analysis

The conformance of data obtained by measurement to normal distribution was investigated in each group by Kolmogorov Smirnov test. The comparisons of the variables conforming to normal distribution were made by Student t-test between the patients with rectal cancer and the control group. As for the comparisons of the variables not conforming to normal distribution, Mann-Whitney U test was used. The analyses of data obtained by counting were performed by chi-square test. The data obtained by measurement were expressed as arithmetic mean±standard deviation while those obtained by counting were expressed as number (%). The significance level was p<0.05. →

Table 1: The comparisons between patients with rectum cancer and the control group by gender and age

Gender	Patients (n:45)		Control (n:90)		p
	n	%	n	%	
Female	22	48.9	44	48.9	
Male	23	51.1	46	51.1	
Total	45	100	90	100	1.000
Mean age	57.7±12.0		57.5±11.8		0.066

Table 2: The distribution of patients with rectum cancer and the control group by smoking habit of their father

Smoking habit	Patient		Control	
	n	%	n	%
Smoker + Quit	24	53.3	38	42.2
Non-smoker	21	46.7	52	57.8
Total	45	100.0	90	100.0
P=0.299				

Table 3: Comparison of the patients and the control group by mean mother and father age at birth

	Patient		Control		p
	Mean	Standard deviation	Mean	Standard deviation	
Mother age at birth	28.5	7.42	25.3	5.83	0.012
Father age at birth	32.4	8.85	28.1	6.67	0.005

RESULTS

45 patients diagnosed with rectum cancer and 90 controls were included in the trial (a total of 135 participants). The comparisons between patients with rectum cancer and the control group by age and gender are presented in Table 1. Patients with rectum cancer and the control group were selected in a way to include 2 controls for one patient with respect to age and gender; there was no statistically significant difference between the patients with rectum cancer and the control group with respect to age and gender. There was no statistically significant difference between the patients with rectum cancer and the control group with respect to status of education and monthly earnings (p=0.432 and p=0.261). The mean BMI, height and weight values at diagnosis of patients and the control group was evaluated. There was no statistically significant difference between the patients and the control group by mean height, weight and BMI values. Patients and the control group were classified as normal, overweight and obese; however no statistically significant difference was detected between the two groups (p=0.249). There was no statistically significant difference between the two groups by smoking habit. There was no patient with rectum cancer that have smoking habit of the mother and there was only one patient in the control group. So that istatistical testes were not performed.

The distribution of patients with rectum cancer and the control group by smoking habit of their father is presented in Table 2. There was no statistically significant difference between the two groups by smoking habit of their father (p=0.299). The presence of cancer history in 1st degree relatives was evaluated. There was no statistically significant difference between the patients and the control group (p=0.567). The presence of rectum cancer history in 1st degree relatives was evaluated. There was no statistically significant difference between the patients and the control group (p=0.600). Comparison of the patients and the control group by mean mother and father age at birth is presented in Table 3. While the mean mother age at birth was 28.5±7.42 in patients, it was 25.3±5.83 in the controls. The difference was statistically significant (p=0.006). While the mean father age at birth was 32.4±8.85 in patients, it was 28.1±6.67 in the controls. The difference was statistically significant (p=0.002).

The distribution of the patients and the control group by mother age at birth is presented in Table 4. The difference between these two groups was not statistically significant (p=0.181). The distribution of the patients and the control group by father age at birth is presented in Table 4. 60% of the patients and 36.7% of the controls had a father ≥ 30 years old at birth. The difference between these two groups was statistically significant (p=0.033). While the mean age at menarche was 14.0±1.6 in patients, it was 13.8±1.3 in the controls. Mean meno-pause age was 45.7±6.9 in patients, it was 47.4±5.3 in the controls. The difference between these two groups was not statistically significant according to menarche and menopause (p=0.700, p=0.338). There was no statistically significant difference between the patients and the control group by comsuption of milk, milk products, bread, cereals, meat and egg. The distribution of the patients and the control group by coffee drinking habit is presented in Table 5. The difference was statistically significant (p=0.037). This means, the patient with rectum cancer consume less amount of coffee than control group. There was no statistically significant difference between the patients and the control group by comsuption of tea, alcohol and fat content of the meals. In addition, there was no statistically significant between two groups by physical activities (p=0.211).

DISCUSSION

In our study, we found that advanced mother and father age at the time of birth, increases the risk of rectum cancer. These findings was releated to some trials. But, when the mothers age was classified there was no statistical significant between these groups. In our opinion, this data may be related with small→

Table 4: The distribution of the patients and the control group by mother and father age at birth

	For mother				For father			
	Patient		Control		Patient		Control	
Parents age	n	%	n	%	n	%	n	%
<20	3	6.7	12	13.3	10	22.2	28	31.1
20-29	26	57.7	58	64.4	8	17.8	29	32.2
‡ 30	16	35.6	20	22.3	27	60.0	33	36.7
Total	45	100.0	90	100.0	45	100.0	90	100.0
p	0.181				0.033			

Table 5: Comparison of the patients and the control group by mean mother and father age at birth

Coffee drinking habit	Patient		Control	
	n	%	n	%
Never	28	62.2	35	38.9
Seldom	12	26.7	37	41.1
Moderate+frequent	5	11.1	18	20.0
Total	45	100.0	90	100.0

numbers of the groups. The advanced father age increases the incidence of germ line mutations and advanced mother age increases the incidence of chromosomal aberations in the germ cells,[1,3] The incidence of achondroplasia and hydrocephaly is higher at advanced father age.[4] This is same as retinoblastoma and Wilm's tumor.[2,5] The Framingham trial detected that advanced father age increases the risk of prostat cancer.[6] There are trials reporting that the advanced mother age increases the risk of breast cancer.[7-9]

We couldn't find any statistically difference between two groups about smoking habits. In a metaanalysis smoking was detected significantly associated with colorectal cancer incidence. Especially the association was stronger for the rectum cancer.[10] But we could not detect similar findigs. Coffee comsuption and its relation with multiple disorders has been investigated with multiple studies.[11,12] In a population based study no significant association was found for rectal cancer in women according to coffee comsuption and it was the same for the men. In same study, it was detected that coffee comsuption may lower the risk in women.[13] In another study decaffeinated coffee was associated with a reduced incidence of rectal cancer.[14] Larsson et all found no relation between coffee comsuption an low risk of colorectal cancer.[15]

In our study, the patient with rectum cancer consumed less amount of coffee than the control group. This may means, according to our study, low coffee intake may increase the risk of rectal cancer.

CONCLUSION

Advanced mother and father age at the time of birth, increases the risk of rectum cancer in their child. So we must keep in mind this situation in rectum cancer pathogenesis. The patient with rectum cancer consumed less amount of coffee than the control group. We can think that coffee intake may lower the risk of rectum cancer. Therefore more comprehensive studies are needed.

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