



## COMPARISON OF BENIGN AND MALIGNANT BREAST DISEASE-RISK FACTORS AND FREQUENCIES IN SAMPLES REFERRED TO PATHOLOGY LABORATORY OF AHWAZ UNIVERSITY OF MEDICAL SCIENCES FROM 2006 TO 2017

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### ABSTRACT

Breast cancer is the most common malignancy in women contributing to about 18% of all cancers worldwide. There are many well-known risk factors for breast cancer, and identifying these risk factors will help to reduce the mortality rate. This study is aimed to compare risk factors and the frequencies in women with benign and malignant breast tumor. This case-control study, was done with 60 women with benign breast tumors as controls and 60 women with malignant breast tumors as case. They were randomly selected and checklist was made. Based on the information in the forms of pathology or from medical records or patient contact, data was completed. Data analysis was conducted using SPSS-16 statistical software. The results showed that the mean age at diagnosis ( $p\_value=0.033$ ), the frequency of positive family history of cancer ( $p\_value=0.028$ ) and the mean age at menarche ( $p\_value=0.01$ ) in the two groups was statistically significant difference. However, the frequency of having an abortion ( $p\_value=0.391$ ), the mean age of first child birth ( $p\_value=0.641$ ), the mean months of breastfeeding ( $p\_value=0.281$ ) and the frequency of having a perfect pregnancy ( $p\_value=0.58$ ) did not show significant difference between the two groups. The mean age at diagnosis and the frequency of positive family history of tumors in the case group, and the mean age of menarche in the control group is higher implication?

**KEYWORDS:** Risk factor, breast cancer, benign tumor, malignant tumor, Ahvaz



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## INTRODUCTION

Breast cancer is the most common malignancy which affects women all over the world<sup>1</sup> and comprises 18% of all types of cancer in women. Also, the risk of breast cancer in women during the lifespan is 11%.<sup>2-4</sup> Risk of breast cancer in ages below 30 years is relatively low, which significantly increases after 80 years old. Based on age, incidence of breast cancer is 22.4 per 100000 and the most common age in Iran is 54-45 years.<sup>5</sup> In addition, patients with advanced stage of disease in Iran are younger than peers in western countries.<sup>6-7</sup> According to the worldwide statistics, 1.5 million women are diagnosed with breast cancer yearly, of which 50,200 people die of this cancer.<sup>8</sup> Breast cancer is the multifactorial disease, where epidemiological studies indicate that environmental, genetic factors and lifestyle can influence the disease process.<sup>9-10</sup> Several risk factors are introduced for breast cancer which includes: age, sex, race, family history, early first menarche (first period) or late menopause.<sup>2,11</sup> Surgery intervention, radiotherapy, chemotherapy and hormonal intervention are the most common therapies in Iran, which despite the fact that these treatments have increased the survival rate of patients, but also had a negative effect on the patients' lives like depression and psychological distress.<sup>12</sup> Haak and Degner evaluated 1249 women whose breast cancer has recently been diagnosed and reported that psychological distress rate was 32.8%.<sup>13</sup> Therefore, early diagnosis and increasing the awareness of the medical community and women in society about the symptoms and risk factors for breast cancer play a key role on the reduction of mortality rate and increase the prognosis and quality of life people with breast cancer.<sup>8</sup> Benign lesions of the breast are divided into proliferative and non-proliferative lesions, each of which are subdivided based on pathologies.<sup>14</sup> The risk of developing these benign lesions into malignant tumors is discussed in various studies.<sup>15</sup> Results of these studies showed that in proliferative lesions, without cellular deformity, and in proliferative lesions, with cellular deformity, the risk of development of malignant breast tumors increased 1.5-2 and 3.5 respectively.<sup>16</sup> No association was found between malignant tumors and non-proliferative lesions of the breast.<sup>17</sup> Several studies showed that benign, carcinoma in situ, lobular carcinoma and proliferative lesions with cellular deformity increase the risk of invasive cancers, while other

types of benign lesions either do not increase or increase slightly the risk of breast cancer.<sup>18, 19</sup>

## MATERIALS AND METHODS

Case group include 60 women, whose pathological samples were confirmed for malignant breast tumors without any history of other types of cancer. Control group include 60 women with benign breast tumors confirmed by pathology laboratory without any history of other type of cancer. The data collection form was completed on the basis of information in the pathology forms and in case of incompleteness, hospital file or contact with the patient was used for completion of the form. The form includes 9 items: Age at the time of diagnosis, history of breast tumors in relatives, marital status, number of children, age at birth of first child, intentional and deliberate abortion and total lactation months for each child. The study was approved by the University's Ethics Committee approved by medical ethic committee: IR.AJUMS.REC.1395.856

## STATISTICAL ANALYSIS

For this cross-sectional case-control study, samples were randomly selected from data list of each laboratory and analyzed by SPSS version 22 software. The chi-square and t-test were used for data analysis using SPSS version 22 software. Statistical significance for all analysis was 0.5. The data was presented as frequency and mean $\pm$  standard deviation (SD).

## RESULTS

The mean ages at the time of diagnosis in women with benign breast tumors and malignant breast tumors were 35.31 and 52.11 respectively which is significantly different ( $p=0.003$ ) (Table 1). The most frequency in case group was women more than 50 years old (55%) and in control group women in the age range of 21-30 years (31.67%) which indicates that the age at the time of diagnosis in case group was higher than the control group (Table 1). The frequency of positive family history, in benign and malignant breast tumor groups, were 11.67% and 76.7% which is statistically significant ( $p=0.028$ ). The frequency of complete pregnancy in benign breast tumor was 65% and in malignant breast tumor was 90% which is statistically insignificant ( $p=0.58$ ) (Table 1). The most frequency in case and control group, respectively

related to 1-2 pregnancy (46.67%) and (36.67%) (Table 3). The mean age at the time of first child birth in women with benign and malignant breast cancer were 20.12 and 26.77 respectively, which is not statistically significant ( $P=0.641$ ) (Table 2). The most frequency in the time of first child birth in case and control group were more than 27 years (46.67%) and below 22 (38.33%) respectively (Table 5). On the other hand, 71.67% of women with the malignant tumor was more than 22 years old at the time of first childbirth, and the frequency in control groups was 26.67% (Table 4). In this

study, history of abortion in benign and malignant tumor group was 45% and 36.67% respectively, which is statistically insignificant ( $p=0.391$ ). Mean lactation months in women with benign breast tumor was 28.66, while the rate for women with a malignant tumor was 38.81 ( $p=0.281$ ) (Table 6). Mean ages of menarche (first period) were 13.31 and 10.71 for women with benign and malignant tumors respectively, which indicates that the age of menarche in control group was higher than case group ( $p=0.01$ ) (Table 2).

**Table 1**  
*Frequency of study variables in subjects*

Variable	Status	Benign (%)	Malignant (%)
Family history of breast tumor	Yes	7 (11.7%)	46 (76.7%)
	No	58 (88.3%)	14 (23.33%)
History or abortion	Yes	27 (45%)	22 (36.7%)
	No	33 (55%)	38 (63.3%)
Marital status	married	43 (71.7%)	58 (96.7%)
	single	17 (28.3%)	2 (3.5%)
Having a child	Yes	39 (65%)	54 (90%)
	No	21 (35%)	6 (10%)

*Values are mean  $\pm$ SD ;( n=120), \* $p<0.01$  when compared with control*

**Table 2**  
*Mean $\pm$ S.D of studied variables*

Variables	Benign	Malignant
Mean age at time of tumor diagnosis	35.3 $\pm$ 1.41	52.11 $\pm$ 1.18
Mean age of menarche	13.3 $\pm$ 2.11	10.71 $\pm$ 1.62
Mean age at first birth	20.12 $\pm$ 11.21	25.77 $\pm$ 10.45
Mean number of pregnancies	1.78 $\pm$ 1.84	2.43 $\pm$ 1.74
Mean lactation months	28.66 $\pm$ 31.39	38.81 $\pm$ 35.77

*Values are mean  $\pm$ SD ;( n=120), \* $p<0.01$  when compared with control*

**Table 3**  
*Frequency of cases according to the number of childbirth*

Number of childbirth	Benign		Malignant	
	Frequency	%	Frequency	%
0	21	35	6	10
1-2	22	36.67	28	46.67
3-4	11	18.33	19	31.67
4<	6	10	7	11.66

*Values are mean  $\pm$ SD ;( n=120), \* $p<0.01$  when compared with control*

**Table 4**  
*Frequency of cases according to the age at the time of diagnosis*

Age at the time of diagnosis	Benign		Malignant	
	Frequency	%	Frequency	%
11-20	8	13.33	0	0
21-30	19	31.67	2	3.3
31-40	13	21.66	10	16.7
41-50	10	16.67	15	25
50<	10	16.67	33	55%

*Values are mean  $\pm$ SD ;( n=120), \*p<0.01 when compared with control*

**Table 5**  
*Frequency of cases according to the age at first birth*

Age at first birth	Benign		Malignant	
	Frequency	%	Frequency	%
Did not give birth	21	35	0	0
22>	23	38.33	11	18.33
22-27	11	18.33	15	25
27<	5	8.34	28	46.67

*Values are mean  $\pm$ SD ;( n=120), \*p<0.01 when compared with control*

**Table 6**  
*Frequency of cases according to the number of lactation months*

Number lactation months	Benign		Malignant	
	Frequency	%	Frequency	%
Did not breastfeed	23	38.33	17	28.33
1-36	15	25	15	25
37-72	14	23.33	18	30
73-108	7	11.67	7	11.67
108<	1	1.67	3	5

*Values are mean  $\pm$ SD ;( n=120), \*p<0.01 when compared with control*

## DISCUSSION

In the present study, mean ages of case and control group at the time of diagnosis were 52.11 and 35.31 respectively, which indicate that mean age in case group was higher than the control group ( $p=0.033$ ). The most frequency in case group was observed in over 50 years old group which comprised 55% of patients, where the most frequency in control group was 21-30 years old (31.67%). In the study conducted by Ebrahimi et al. in Iran, the mean age of case and control group was 47.5 and 44.2 yr respectively, which is not significantly different. The most frequency of disease in both groups was observed in patients below 39 years old (30.4% vs 40.6%). The difference with our results may be attributed to small sample size in the present study.<sup>20</sup> In the present study, 76.67% and 11.67% of patients in case and control group have a family

history of tumors which is statistically significant ( $p=0.028$ ). These results are consistent with Ebrahimi et al. study<sup>20</sup>. In the present study, history of abortion in case and control groups was 36.67% and 45% respectively ( $p=0.391$ ). Bral and colleagues based on the epidemiological study on 58 cases, reported that there was no significant relationship between the history of abortion and rate of breast tumor.<sup>21</sup> Mean ages of menarche (first period) in our study were 13.31 and 10.71 for women with benign and malignant tumors respectively, which indicate that the age of menarche in control group was higher than in the case group ( $p=0.01$ ). Also, the highest frequency observed in 9-11 yr (76.67%) in the case group and over 14 years old (41.67%) in control group. Ebrahimi et al., reported that the mean age at menarche in case and control group was 13.4 and 13.5, respectively, which is not significantly

different ( $p=0.15$ ). On the other hand, Hall et al. showed that mean ages of menarche in case and control group was 10.1 and 13.7 respectively<sup>22</sup> which is consistent with the results of the present study. According to our results, the mean ages at the time of first childbirth in the case and control groups of women were 26.77 and 20.12 yr respectively, which is not statistically significant ( $P=0.641$ ). The most frequency in the time of first childbirth in case and control group was more than 27 years (46.67%) and below 22 (38.33%) respectively. Ebrahimi et al., showed that mean ages at the time of first childbirth in case and control group were 20.5 and 19.4 which is not significantly different.<sup>20</sup> The frequency of complete pregnancy in benign breast tumor was 65% and in malignant breast tumor was 90% which is not statistically significant ( $p=0.58$ ). The most frequency in case and control group related to 1-2 pregnancy (46.67% in case group vs 36.67% in control group). In previous studies, contradictory results have been presented. Toung et al reported that the most frequency in case and control group related to 1-2 pregnancy which is not significantly different (64.9% vs 67.3%).<sup>23</sup> In contrast, the significant difference was observed in another study.<sup>24</sup> In the present study, the mean lactation months in case and control groups was 38.81 and 28.66 respectively, which was not significantly different ( $p=0.281$ ). Also, the most frequency observed in 37-72 mo (30%) in the case group and without lactation (38.33%) in control group. From 17 women without lactation in malignant group, 2 cases were single, whereas, from 23 women without lactation in benign group, 17 cases were single. In some studies, the significant difference in terms of mean lactation months was reported,<sup>25-27</sup> wherein studies conducted in China,<sup>28</sup> Japan<sup>29</sup> and other western countries<sup>30-32</sup> the significant difference was not reported.

## CONCLUSION

The mean age at diagnosis and the frequency of positive family history of tumors in the case group,

and the mean age of menarche in the control group is higher, and it seems to be important that the screening test of breast cancer should be started in younger ages in patients with positive familial history.

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## AUTHORS CONTRIBUTION STATEMENT

Iran Rashidi and Peyman Kaveh carried out the experiment. Peyman Kaveh and Amir Mohammad Eghbalnejad Mofrad wrote the manuscript with support from Ali Kaveh and Pardis Safari Kahyesh; Amir Mohammad Eghbalnejad Mofrad contributed to sample preparation Mahsa Rezasoltani and Ali Kaveh contributed to the interpretation of the results Amir Mohammad Eghbalnejad Mofrad and Pardis Safari Kahyesh analyzed the data.

## CONFLICTS OF INTEREST

Conflict of interest declared none.

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