RESEARCH ARTICLE

Do the Different Reasons for Lactation Discontinuation Have Similar Impact on Future Breast Problems?

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Abstract

Background: Breast feeding is considered to be mutually beneficial for both mothers and infants, though the effect of lactation problems on development of breast lesions (whether benign or malignant) is not clear. Objectives: This study was conducted to identify possible relations between lactation problems and benign and malignant breast disease. Materials and Methods: 308 patients referred to two referral breast clinics in Tehran, the capital city of IR Iran, between January 2008 and January 2011, were recruited. They were interviewed by a standard questionnaire regarding breast feeding problems. The study population was classified in 3 major groups; breast feeding without any problem, unwillingness to breast feed according to whether mothers' preference not to feed or some breast problems like mastitis, and finally insufficient milk that caused the mothers to feed their babies with formula. Results: Recruiting binary logistic regression method, mother's unwillingness to feed her child by breast milk, and also breast problems such as mastitis and abscess during lactation period showed significant relation with both benign and malignant breast diseases (p value<0.01). Surprisingly, inadequate milk was not associated with any of these conditions. Conclusions: We concluded that lactation problems which involve normal milk drainage from the breast may play an important role in whether the mother wll subsequently develope both benign and malignant pathologies. In contrast in the situation that the production of the milk is not sufficient and there are no intentional or unintentional problems in drainage of the produced milk, future problems would not be more common.

Keywords: Breast cancer - breast benign diseases - breastfeeding - lactation

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Introduction

Accounting as the second cause of cancer- related death globally and fifth in Iran, it is clear that breast cancer places a heavy financial burden on different societies worldwide (IARC, 1994; Ferlay et al., 2000; Naghavi 2004). Although benign diseases may appear less concerning, their consequent angst of possible cancer besides the obliged cost of additional procedures to establish the diagnosis can be troublesome.

Different categories of risk factors have been studied specially in the field of breast cancer. Theses researches range from genes to lifestyle; of those, one important category is reproductive factors such as menarche and menopause, parity features and breast feeding.

Needless to say, breastfeeding has great beneficial effects on all aspects of infant health. Moreover, numerous epidemiological studies have investigated the beneficial effects of lactation on breast cancer (Lipworth et al., 2000; 2002; Parkin, 2011).

In many studies, an inverse association between breast feeding and breast cancer risk came to be considered (Byers et al., 1985; Yoo et al., 1992; 1993; 1994; Newcomb et al., 1994; Lipworth et al., 2000; 2002; Woodman, 2002; Abou-Dakn et al., 2003; Aguilar et al., 2010; Parkin, 2011). While this apparent protective effect has been revealed in most studies limited to pre-menopausal women, (Byers et al., 1985; 1993; 1994; Newcomb et al., 1994; Abou-Dakn et al., 2003) one study has also verified a slight protective effect of breast feeding on postmenopausal ones too (Newcomb et al., 1999). In opposing to preceding studies, there are other studies that show breast feeding is unlikely to have an appreciable protective role in reduction of breast cancer risk (MacMahon et al., 1970; Adami et al., 1990; Negri et al., 1996; Andrieu et al., 2006).

Some mothers are unable to take advantage of breastfeeding for different variety of reasons. In this study we discuss three common categories of these reasons as; insufficient milk supply, breast diseases that inhibit a successful breast feeding and the lack of mother's willingness for lactation. It is really muddled that if these problems are distinctly connected to diseases of breast or breastfeeding is a unique element regardless of its failure causes.

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To our knowledge currently there is no specific study to evaluate the association between breast cancer and breastfeeding problems that involve mothers' unwillingness due to their job, cultural believes or any same concept.

On the side of benign breast diseases (BBD), the literature discussing the effect of breastfeeding on BBD is also sparse and controversial yet (Bernardi et al., 2012).

It seems vital to do more precise study on different specific lactation disorders and their relative risk for breast cancer. This would be of paramount importance because finding a specific lactation disorder which acts as a risk factor for breast cancer may give opportunity for any kinds of interventions like screening. Moreover there is no study concerning the effect of lactation disorders on breast cancer in Iran. The authors hope to make a helpful suggestion regarding the screening of breast cancer in lactation disorders.

Materials and Methods

Conducting a case- control study, eligible subjects were selected among women referred to two referral breast clinics in Tehran (Iranian center for breast cancer clinic and breast clinic), between January 2008 and January 2011.

A self-administered questionnaire was used to obtain patients' data at the date of referring to the clinic. It has been reviewed by an epidemiologist, two breast surgeons and also piloted by 10 patients in advance. Those participants who were unable to fill the questionnaire were interviewed individually by trained nurses who attended a training course by a breast surgeon.

Three groups of breast pathologies were identified: *i*) Malignant neoplasm of female breast (2012 ICD-10-CM Diagnosis Code: C50)http://www.icd10data.com/ICD10CM/Codes/C00-D49/C50-C50/C50-#C50.91; *ii*) Benign disorders of breast including benign neoplasms (2012 ICD-10-CM Diagnosis Code: D24)http://www.icd10data.com/ICD10CM/Codes/C00-D49/D10-D36/D24 and other disorders of breast (2012 ICD-10-CM Diagnosis Codes: N60 to N65) http://www.icd10data.com/ICD10CM/Codes/N00-N99/N60-N63; *iii*) Breasts without any clinical and imaging finding.

Definite diagnosis was made by a breast surgeon based on clinical manifestations, radiologic findings and, if needed, tissue diagnosis, according to ICBC guidelines for breast disease management (Kaviani et al., 2011). Patients with special conditions were not enrolled. These conditions included Sheehan syndrome, mother's diseases and drug use that contraindicate breast feeding (like HIV infection) and infant's problems such as cranio-cervical syndrome.

Considering all breast cancer risk factors and their categories to be found in the literature, study variables included age, family history of breast cancer in the first or second degree relatives, number of pregnancies and the age of the first full-term pregnancy (younger or older than 35), age at menarche (younger or older than 12), age at menopause (younger or older than 50), history of hormone replacement therapy (HRT) (less or more than six months), history of oral contraceptive pills (OCP) use (more than six months), lactation period (less or more than six months) (Akbari et al., 2011; Parkin, 2011) and breast feeding problems. The latter was explained as having any of these problems that led to discontinue breast feeding: *i*) Mothers' unwillingness to start or continue breast feeding; *ii*) Mother's milk not enough for the baby; *iii*) Breast disorders including; *iv*) Breast engorgement: Breasts that are too full can prevent the baby from suckling because they cannot be grasped; *v*) Sore nipples: Transient soreness can occur during the first week postpartum and is usually temporary; *vi*) Infection: Soreness and inflammation on the breast surface or a fever in the mother may be an indication of breast infection (mastitis).

Although there was no limitation for the patients with known breast cancer risk factors to be included in the study, patients received high dose irradiation to chest wall were not studied since there was a considerable risk of reverse causality.

Enter method was obtained to build up a multiple logistic regression model containing associated risk factors and their probable interactions. Cases of malignancies and patients with benign diseases were separately compared to control group. All variables with p value less than 0.2 or odds ratio (OR) greater than 2 (or less than 0.5 respectively) were offered to the model.

This study was conducted according to the principles expressed in the Declaration of Helsinki and Iranian Protection Codes of Human Subject in Medical Research http://www.hbi.ir/NSite/SpecialFullStory/News/?Id=374&Level=12 . Ethics approval was gained from Institutional Review Board of Tehran University of Medical Sciences.

Results

Three hundred and eight patients with benign breast pathologies, 179 cases of breast cancer, and 136 persons without any pathological finding were eligible to enter the study. After full explanation of the study to the patients, all of them agreed to fill out the questionnaire or take part in the interviews.

Population characteristics were studied as shown in Table 1. Distribution of these factors was not significantly different in cases of benign and malignant breast diseases compared to controls (2-sided p value>0.05) except for history of HRT use which was significantly more frequent in patients with malignancy and also lactation time in comparison of benign group and controls (p value<0.05).

Among problems of breastfeeding, mom's unwillingness to start or continue breastfeeding showed strong independent association with malignancies of breast (OR 4.573, p value=0.002) as also mentioned intervening breast diseases did (OR 3.669, p value<0.001). In contrast, insufficient milk did not show any significant relation (p value>0.05) (Table 2). Interestingly slightly weaker but still the similar associations were seen comparing benign cases with controls while insufficient milk still did not seem to be a risk factor.

Comparing crude and adjusted odds ratios for possible confounders in Table 1, none had significant impact

Table 1. Reproductive Characteristics of Study Population

Characteristics		Normal	Benign	Malignant
Age (yr):	20-39	66 (36%)	109 (35%)	39 (22%)
	40-59	106 (59%)	181 (59%)	118 (66%)
	60-79	9 (5%)	18 (6%)	22 (12%)
First degree relative with breast malignancy:				
	No	155 (86%)	268 (88%)	160 (90%)
	Yes	25 (14%)	38 (12%)	18 (10%)
Second degree relative with breast malignancy:				
	No	152 (84%)	259 (85%)	163 (92%)
	Yes	21 (16%)	46 (15%)	18 (8%)
Age at menarch (yr):	>13	140 (78%)	223 (73%)	127 (73%)
	≤13	39 (22%)	83 (27%)	47 (27%)
Age at pregnancy (yr):	<35	175 (98%)	298 (99%)	177 (99%)
	≥35	4 (2%)	3 (1%)	1 (1%)
Age at menopause (yr):	≤50	172 (95%)	290 (94%)	163 (91%)
	>50	9 (5%)	18 (6%)	16 (9%)
History of HRT use (mo):	≤6	173 (96%)	291 (95%)	164 (92%)
	>6	7 (4%)	17 (5%)	15 (8%)
History of OCP use (mo):	≤6	99 (55%)	180 (58%)	86 (48%)
	>6	64 (45%)	128 (42%)	93 (52%)
Lactation period (mo):	>6	149 (84%)	246 (85%)	165 (95%)
	≤6	20 (16%)	45 (15%)	9 (5%)

Table 2. Risk Factors in Relation to Malignancies and Benign Diseases of Breast and Their Odds Ratios in Multivariate Analysis by Logistic Regression

Risk factor	Malignancy cases v.s controls		Cases of benign diseases v.s controls	
	Odds ratio	p value (two-sided)	Odds ratio	p value (two-sided)
Breast feeding problem				
Mom's unwillingness	4.573	0.002	4.022	0.001
Intervening breast diseases	3.669	0	2.791	0
Insufficient milk	1.19	0.387	1.163	0.303
HRT	1.963	0.055	1.033	0.92
First degree relative with breast cancer				
	1.591	0.08	1.048	0.833

on these results, though HRT more than 6 months and family history of first degree relative with breast cancer, as predicted, showed significant association with breast cancer (Table 2).

Model fitness was approved through Hosmer-Lemeshow test in both models (p value>0.05).

Discussion

The results of this study indicate that breastfeeding discontinuation due to problems rather than insufficient milk production (i.e. mom's unwillingness and breast diseases) may strongly increase breast cancer risk. Similar relation is observed among benign diseases of breast and breastfeeding problems. While insufficient milk did not appear to have same impact.

Insufficient milk supply as one of the most important causes of lactation cessation, was once shown to exert a two-fold increased risk of breast cancer, rather than other reasons (Byers et al., 1985). There are plenty of articles that discuss similar links in humans (Byers et al., 1985; Yang et al., 1993; Newcomb, 1997; Lipworth et al., 2000; Sakai, 2001; Shema et al., 2007). Previous murine studies also suggested animal models at increased risk of breast cancer meet more probable inability to produce enough milk to support the survival of their offspring (Wiener et al., 1994; Hutchinson and Muller, 2000; Julien et al., 2007). It is however important to note that despite the mentioned studies, a systematic review conducted by Cohen, verified no conclusive evidence of this relationship (Cohen et al., 2009). Still they mention that meta-analysis has demonstrated less breast cancer risk among mothers who breastfeed their children more (Kim et al., 2007). They cited vague and inexact definition of insufficient milk and breastfeeding problems as main explanation for sparseness of literature (Cohen et al., 2009). To overcome this challenge, we explained other choices (mom's unwillingness, breast diseases and other unspecified reasons) to clarify insufficient milk for the interviewee. It still seems to be some chance of bias concerning moms' honesty and precision in answering the questions that could not be avoided.

Diseases of breast like abscess and mastitis have not been well studied as a cause of breast-feeding cessation; Whereas a cohort study in Sweden identified a slight increased risk of breast cancer in women who had history of mastitis (Lambe et al., 2009). Our study showed stronger association still on the same way. It could be leading to the hypothesis that breasts with normal milk production and problems in drainage of produced milk may be more threatened by breast cancer. Even so the same effect that is observed by mom's unwillingness to breastfeed her child, besides normal milk production, is another noble evidence; there still is place for evaluating the idea more.

In spite of having notable financial and psychological burden, possible relation of breast feeding and benign diseases of breast has not yet been assessed sufficiently. An Italian study found no difference in incidence and types of BBD in cases who had breastfeeding compared to control group (Bernardi et al., 2012). It is though against our findings which implies possible influence of breast feeding problems with normal milk output on increasing vulnerability to breast benign diseases.

Breastfeeding time trend is a crucial item in both defining breastfeeding problems and insufficient milk. These concepts needed to become more objective, leading us to ask every participant about duration of feeding their children by breast milk. Since women at different ages took part in interviews, duration of exclusive breastfeeding was not obtained regarding possible recall bias.

In conclusion, to conclude there is still notable place for more investigation into the causes of breast-feeding cessation. This could result in launching new and still simple preventive protocols consisting encouraging mothers with normal milk production not to stop breast feeding their children.

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