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Preferences for Endocrine Therapy Among Breast Cancer Patients

Weiwei Tang[1]*, Kai Fu[1], Dawei Rong[1], Hongyong Cao[1], Hanjin Wang[1] and Hao Tong[2]

[1]*Department of General Surgery, Nanjing First Hospital, Nanjing Medical University, Nanjing, Jiangsu, PR China*
[2]*Jiangsu Key Laboratory of Materials and Technology for Energy Conversion, College of Material Science and Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu, PR China*

Abstract

Background: Poor adherence is a common problem in the endocrine treatment of breast cancer, which requires patients to take medication at least 5 years duration. So far, very little was reported in the literature on the research of the compliance of endocrine therapy for breast cancer in China and there have not been any reports on the follow-up of breast cancer patients for 5 years. This study was aimed to understand the compliance of endocrine therapy and analyze impact factors, so as to put forward intervention measures to improve compliance of endocrine therapy in breast cancer patients.

Methods: 279 patients who received modified radical mastectomy or breast conserving surgery in Nanjing first hospital from January 2010 to December 2011 were enrolled in this survey. All patients were investigated by telephone follow-up from Monday to Friday. In this study, the count data was described by frequency and constituent ratio. Correlation analysis was performed by using SPSS for Windows v.19.0 (SPSS, Chicago, IL).

Results: The results of oral compliance with endocrine drugs in 279 cases with breast cancer revealed that the number of patients who withdraw drugs in 4th year accounted for the largest one. Moreover, endocrine therapy of breast cancer compliance was getting worse with the extension of time. There was a statistically significant difference in compliance between the three groups, suggesting that the compliance of the tamoxifen group was the worst and anastrozole group was the best. Univariate analysis and logistic regression model both reflected that drug type was the factor influencing the compliance of endocrine therapy in patients with breast cancer.

Conclusion: The adherence of endocrine therapy to breast cancer is getting lower and lower with extension of time. Different endocrine drugs showed different compliance, in which tamoxifen poorer compliance has compared with the AI class of drugs. Combined with other diseases and drug classification were the main factors influencing compliance of oral endocrine drugs in patients with breast cancer.

Keywords: Patient; Endocrine therapy; Adherence; Breast cancer

Introduction

Breast cancer (BC), with approximately 1.7 million cases diagnosed and treated worldwide each year, remains the most common cause of cancer-related death among women worldwide [1,2]. In recent years, the incidence of breast cancer in China has also increased rapidly, especially in large and medium-sized cities, which has imposed a great burden both to families and society [3,4]. Depending on clinical tumor subtype, therapies for breast cancer include conventional surgery, endocrine therapy, anti-HER2 targeting, and chemotherapy [5]. In all luminal subtype for early breast cancer, adjuvant endocrine therapy over the course of 5-10 years is considered standard, which is directly correlated to the degree of hormone receptor positivity [6].

20 mg tamoxifen per day is considered as the standard endocrine therapy in premenopausal patients ,whereas, tamoxifen and aromatase inhibitors are both valid therapeutic options, either as monotherapy for 5 years or in sequence in postmenopausal patients [7,8]. However, endocrine therapy for breast cancer does not get better attention in China compared to USA, where endocrine therapy costs accounted for 55% of all anti-tumor-related drugs while only 4% in China mainland.

Poor adherence is a common problem in the treatment of many diseases [9-11]. Endocrine therapy in breast cancer is a long-term process, requiring patients to take medication at least 5 years duration. So far, very little was reported in the literature on the research of the compliance of endocrine therapy for breast cancer in China and there have been extremely few reports on the follow-up of breast cancer patients for 5 years. As a result, it is necessary to explore the compliance of oral endocrine drugs in patients with breast cancer.

This study was aimed to understand the compliance of endocrine therapy and analyze impact factors, so as to put forward intervention measures to improve compliance of endocrine therapy in breast cancer patients.

Research Patients and Methods

Study design and participants

279 patients who received modified radical mastectomy or breast conserving surgery in Nanjing first hospital from January 2010 to December 2011 were enrolled in this survey (Figure 1).

Inclusion criteria were

1. Each breast cancer patient received modified radical mastectomy or breast conserving surgery

2. Patients with a clear pathological diagnosis and complete clinical data

*Corresponding author: Weiwei Tang, Department of General Surgery, Nanjing First Hospital, Nanjing Medical University, Nanjing, Jiangsu, PR China, Tel: +86-5288-7042; Fax: :+86 25 5226 9924; E-mail: whj_888@sohu.com
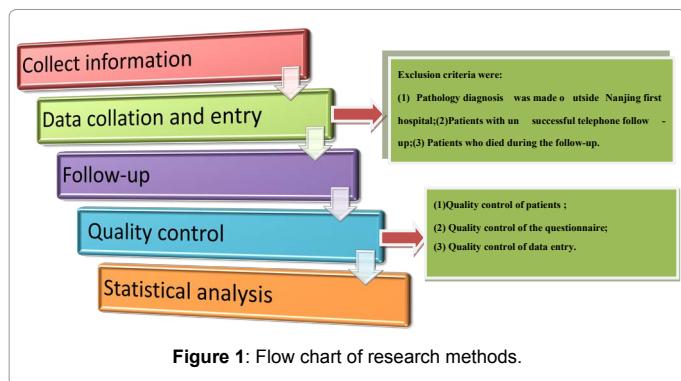
Figure 1: Flow chart of research methods.

3. Immunohistochemistry was positive for ER and or PR

4. Patients fully understood the diagnosis of the disease.

Exclusion criteria were

1. Pathology diagnosis was made outside Nanjing first hospital

2. Patients with unsuccessful telephone follow-up

3. Patients who died during the follow-up

Written informed consent was obtained from all patients prior to participation in the study. The medical ethics committee of Nanjing first hospital, Nanjing Medical University approved the study.

Research Methods

Information collection

The general information of patients with modified radical mastectomy or breast conserving surgery was collected through access to medical records, which included gender, age, occupational, education, monthly allowance, drug types, side effect, periodic inspection, combined with other diseases, lymph node metastasis, family history and feeding history.

Follow-up

All patients were investigated by telephone follow-up from Monday to Friday. After each telephone connection, the respondents were given brief education so as to answer questions seriously and improve the authenticity of information. If the call cannot be dialed three times at different times on different days, call follow-up fails. Each call at different times on different days call 3 times, the call follow-up fails.

Compliance determination

According to the current literature, patient compliance is defined as that the percentage of days covered by the amount of medication dispensed (MPR) is 80% or more. Medication time <80% means poor compliance while ≥ 80% represents good compliance. In breast cancer endocrine therapy, the duration ≥ 4.0 years is considered as good compliance.

Endocrine drugs

The endocrine therapy drugs used in this study include: Tamoxifen 20 mg oral once daily; Letrozole tablets 2.5 mg orally once daily; Anastrozole 1 mg orally once daily.

Statistical method

The count data was described by frequency and constituent ratio.

Correlation analysis was performed by using SPSS for Windows v.19.0 (SPSS, Chicago, IL). For all statistical tests, a P-value of less than 0.05 was defined as statistically significant.

Quality control

Quality control of patients: The purpose of the study and each part of the questionnaire were explained to the patients during telephone follow-up.

Quality control of the questionnaire: Before the data entry, the collected questionnaires were sorted out and selected, and the unqualified questionnaire was removed.

Quality control of data entry: The completeness of all questionnaires was checked before data entry by using the double-entry method. Significant deletions of data as well as logistic errors were corrected by searching the original questionnaire.

Results

The general information of 279 patients with breast cancer participating in endocrine therapy follow-up

A total of 279 patients with modified radical mastectomy or breast conserving surgery were enrolled in this study. The detailed information is listed Table 1, which included age, occupation, education, monthly allowance, drug types, side effect, periodic inspection, combined with other diseases, lymph node metastasis, family history and feeding history.

Results of oral compliance with endocrine drugs in 279 patients with breast cancer

In this study, the results of oral compliance with endocrine drugs in 279 cases with breast cancer showed that the number of patients who withdrawal drugs during 5 years was 0, 16, 40, 78, 65 respectively ,of which the number in 4th year accounted for the largest one (Figure 2). In addition, endocrine therapy of breast cancer compliance was getting worse with the extension of time. The medication rate during 5 years was 100.0%, 94.3%, 79.9%, 52.0%, 28.7% respectively (Figure 3).

Results of compliance of different endocrine drugs

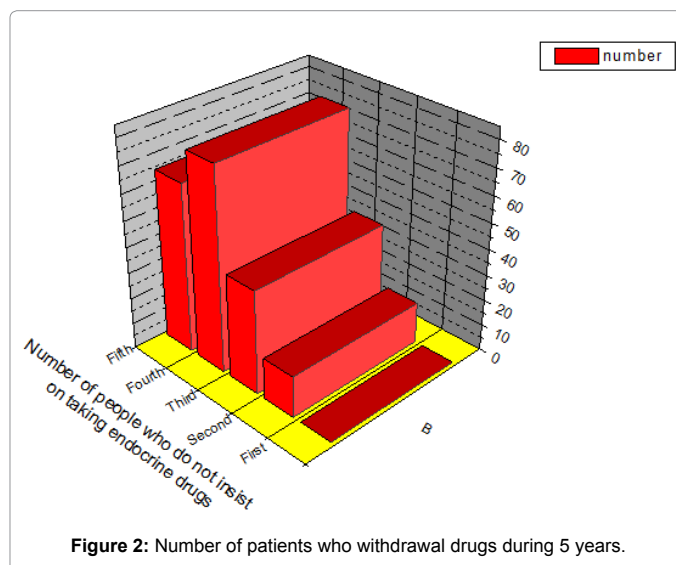In this study, a total of 24 cases taking Tamoxifen (61.29%), 75

Figure 2: Number of patients who withdrawal drugs during 5 years.

Variables	N	%
Age(years)		
≤ 35	5	1.8
35-60	54	19.4
>60	220	78.8
Occupation		
Workers	62	22.2
Farmers	68	24.4
Personnel of Enterprises and Institutions	54	19.4
Civil servants or managers	34	12.2
Freelance	18	6.5
Other	43	15.3
Education		
Elementary school or less	64	22.9
Middle school	71	25.4
High school	110	39.5
College level or more	34	12.2
Monthly allowance (Yuan)		
<1000	5	1.8
1000~	45	16.1
3000~	88	31.5
5000~	125	44.8
10000~	16	5.8
Drug Types		
Tamoxifen	24	8.6
Letrozole	140	50.2
Anastrozole	75	26.9
Changing	40	14.3
Side effect		
With	59	21.1
Without	220	78.9
Periodic inspection		
Yes	228	81.7
No	51	18.3
Combined with other diseases		
Yes	63	22.6
No	216	77.4
Lymph node metastasis		
With	78	28
Without	201	72
Family history		
Yes	5	1.8
No	274	98.2
Feeding history		
Yes	272	97.5
No	7	2.5

Table 1: The general information of 279 patients with breast cancer.

cases taking Letrozole and 140 cases taking Anastrozole. There was a statistically significant difference in compliance between the three groups (P<0.05), suggesting that the compliance of the Tamoxifen group was the worst and Anastrozole group was the best (Table 2).

Analysis of factors influencing compliance of oral endocrine drugs in patients with breast cancer

Univariate analysis: The results showed that occupation, education, monthly allowance, drug types, periodic inspection, combined with other diseases and family history were all risk factors in compliance of oral endocrine drugs (Table 3).

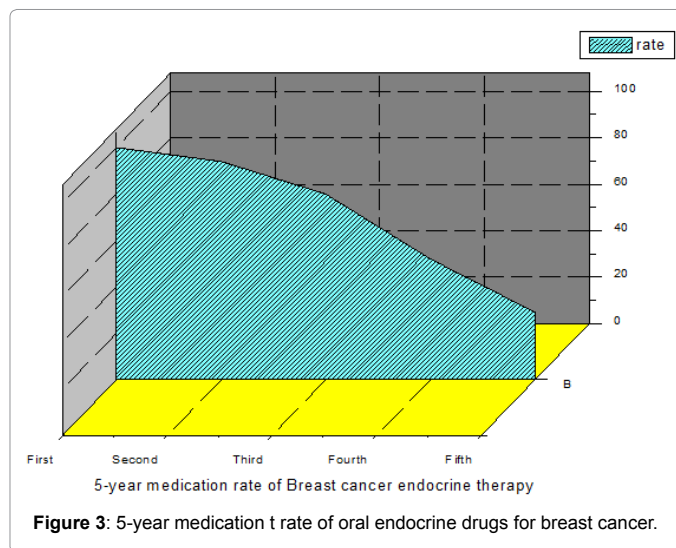**Logistic regression analysis:** Univariate analysis only reflects

Figure 3: 5-year medication t rate of oral endocrine drugs for breast cancer.

Drug type	Good Compliance (%)	Bad Compliance (%)	X2	P
Tamoxifen	0 (0)	24 (100)	32.254	0
Letrozole	38 (50.7)	37 (49.3)		
Anastrozole	87 (62.1)	53 (37.9)		
Changing	23 (57.5)	17 (42.5)		

Table 2: Comparison of compliance in different endocrine drugs.

the relationship between a single variable and compliance but cannot control the various variables or describe the interaction between multiple variables. As a result, on the basis of the analysis, Logistic regression model was used to evaluate the relationship between multiple factors and compliance. The results showed that the factors influencing the compliance of endocrine therapy in patients with breast cancer were drug types and combined with other diseases (Table 4).

Discussion

Compliance refers to that patients are considered to be adherent when they follow the prescription guidelines made by the physician correctly, in acting co-responsibly towards their treatment [12]. Adjuvant hormone therapy through selective ER modulators and aromatase inhibitors has contributed to significant reductions in recurrence and mortality in women with breast cancer [13]. Adherence to the full course of treatment of at least five years is necessary to obtain the full benefits of hormone treatment [14]. Although there are some studies evaluating adherence, which compare the data obtained from these different studies, very little was reported in the literature on the research of the compliance of endocrine therapy for breast cancer in China. Therefore, studies that address this subject are important as they are able to identify possible problems and to suggest measures to promote and improve adherence to medication in China.

Previous reports showed the compliance of Tamoxifen was 41-88% while AI was 50-91% [15,16]. In Tamoxifen and AI joint study, the compliance was 46-100% [17-19]. In our study, the average level of compliance of breast cancer endocrine therapy was 51.4%, which was at a moderate level compared to other countries. The results of oral compliance with endocrine drugs in 279 cases with breast cancer revealed that the number of patients who withdraw drugs in 4th year accounted for the largest one. Moreover, endocrine therapy of breast cancer compliance was getting worse with the extension of

	Variables	Good Compliance	Bad Compliance	P
Age(years)				0.293
	≤ 35	2	3	
	35-60	24	30	
	>60	122	98	
Occupation				0.000*
	Workers	24	38	
	Farmers	67	1	
	Personnel of Enterprises and Institutions	20	34	
	Civil servants or managers	34	0	
	Freelance	1	17	
	Other	2	41	
Education				0.000*
	Elementary school	33	31	
	Middle school	12	59	
	High school	69	41	
	College level	34	0	
Monthly allowance (Yuan)				0.000*
	<1000	0	5	
	1000~	21	24	
	3000~	1	15	
	5000~	20	68	
	10000~	106	19	
Drug Types				0.000*
	Tamoxifen	0	24	
	Anastrozole	87	53	
	Letrozole	38	37	
	Change	23	17	
Side effect				0.13
	With	31	22	
	Without	117	109	
Periodic inspection				0.004*
	Yes	130	98	
	No	18	33	
Combined with other diseases				0.000*
	Yes	62	1	
	No	86	130	
Lymph node metastasis				0.513
	With	41	37	
	Without	107	94	
Family history				0.026*
	Yes	0	5	
	No	148	126	
Feeding history				0.567
	Yes	144	128	
	No	4	3	

Table 3: Analysis of factors influencing compliance of oral endocrine drugs in patients with breast cancer.

time. Therefore, it is necessary to arouse the community's attention to endocrine treatment compliance and enhance adjuvant hormone therapy adherence in breast cancer survivor's. In this report, a total of 24 cases taking tamoxifen (61.29%), 75 cases taking letrozole and 140 cases taking anastrozole. There was a statistically significant difference in compliance between the three groups, suggesting that the compliance of the tamoxifen group was the worst and anastrozole

	B	t	Sig.	EXP(B) 95% C.I.		
				Lower limit	Upper limit	
Occupation	-0.025	-1.447	0.149	-0.058	0.009	
Education	-0.038	-0.776	0.438	-0.136	0.059	
Monthly Allowance	-0.007	-0.201	0.841	-0.075	0.061	
Drug types	-0.216	-6.447	.000*	-0.281	-0.15	
Periodic inspection	0.126	1.833	0.068	-0.009		0.261
Combined with other diseases	0.551	9.034	.000*	0.431		0.671
Family history	-0.244	-1.264	0.207	-0.624		0.136

Table 4: The multiple logistic regression analysis with compliance of endocrine therapy for breast cancer.

group was the best. Univariate analysis and logistic regression model both reflected that drug type was the factor influencing the compliance of endocrine therapy in patients with breast cancer. The reason may be due to tamoxifen has main side effects for gastrointestinal reactions and endometrial thickening. Logistic regression model was used to evaluate the relationship between multiple factors and compliance. The results showed that the factors influencing the compliance of endocrine therapy in patients with breast cancer were drug types and combined with other diseases. This may be caused by that breast cancer patients combined with other diseases need to take other oral medication, whose compliance were higher that patients suffering from a single disease.

Shortcomings of this Study

Due to the limitation of objective conditions and research time, this study adopted the convenience sampling method and only one hospital was participated, which may affect the sample representation. Therefore, the future study should enhance the representation of the sample and further expand the sample size.

Conclusion

The adherence of endocrine therapy to breast cancer is getting lower and lower with extension of time. Different endocrine drugs showed different compliance, in which tamoxifen poorer compliance has compared with the AI class of drugs. Combined with other diseases and drug classification were the main factors influencing compliance of oral endocrine drugs in patients with breast cancer.

Acknowledgements

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