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The Natural Menopause Age of Women in Erzurum and Factors Influencing The Age at Menopause

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Abstract: In this study the age at menopause and factors influencing age at menopause were investigated by a questionnaire in 282 women. The mean age of menopause was found to be 45.3 years and ranged from 35 to 54. Positive relationships were found between age at menopause and marital status, body mass index, gravidity, parity, age at menarche, menstruation and menstruation

bleeding period. Whereas negative relationships were found between age at menopause and smoking, age at first birth, abortion status and oral contraceptive use.

Key Words: Menopause, parity, body mass index.

Introduction

By the year 2000, the average life expectancy for women in developing countries is expected to be 65-70 years. All women who live beyond the age of 55-60 years and many of younger age experience a period of transition from the reproductive to the nonreproductive stage of life. If it is assumed that reproductive function in women generally ceases at about the age of 50 years, it may be calculated that by the year 2000, one in every two to three of these women can expect to live for more than 30 year after the menopause (1, 2, 3, 4). Although this would appear to support the notion that age at menopause is predetermined, a number of environmental factors have been shown to affect ovarian function. Smoking, obesity, parity, age at menarche, oral contraceptive use, race and sociodemographic factors have been studied in relation to menopausal age (1, 4, 5, 6). Factors delaying menopause may have postpone the development of postmenopausal medical conditions such as cardiovascular disorders and osteoporosis, but may increase the risk of endometrial and breast cancer. We therefore studied the independent effects of variables that may influence a woman's age at natural menopause.

Matiral and Method

This is defining field study carried out in order to determine the natural menopause age of women and fac-

tors influencing the age at natural menopause in Erzurum, an eastern city of Turkey.

The subjects of this study is composed of the women between the age of 35 and 54 years have been registered at nine public health centers in the city centre. The age at menopause and factors influencing age at menopause were assessed by a questionnaire. It was determined that of the 416 women in this study, 62 of them were not at menopause, 72 of them were at premenopause, and 282 of them were at menopause.

When 12 months passed since the last menses, the woman was diagnosed as being menopausal (6).

Body mass index was calculated from the formula: body weight (kg)/height (m²) (7). The term "chronic energy deficiency" was used for values less than 18.5 and the term "obesity" was used for values more than 25. Because body mass index may alter after menopause, the new menopausal women (one year or less) were excluded from statistics associated with body mass index.

For the Statistical analysis, statgraphics packed program was used and student's t test analysis was applied.

Results

Relationships between age at natural menopause and characteristics in women was shown in Table 1.

Smoking: Nonsmoking women (N=242, 45.59 years)

Characteristics	Total sample	Age at menopause	t	p
Smoking				
Ever	40	43.43±3.11	2.79	<0.01
Never	242	45.59±4.73		
Body mass index				
≤18.5	9	41.22±1.2 (1:2)	1.99	<0.05
18.5-25	23	43.52±3.36 (2:3)	11.32	<0.001
≥25	40	50.7±1.68 (1:3)	15.94	<0.001
Marital status				
Currently married	214	45.63±4.51		
Seperated	61	44.79±4.57 (2:3)	3.46	<0.001
Single	7	38.71±1.79 (1:3)	4.04	<0.001
Parity				
0	12	40.33±2.74		
≥1	270	45.42±4.55	3.84	<0.001
1 or 2	36	43.36±3.44 (1:3)	4.44	<0.001
3 or 4	105	44.49±4.66 (2:3)	3.98	<0.001
5 or more	129	46.85±4.33		
Age at first birth (among parous women)				
≤19	142	46.81±4.57 (1:2)	4.79	<0.001
0-29	125	44.23±4.14		
≥29	3	41±1 (1:3)	2.19	<0.05
Gravidity				
1-2	19	42.65±3.43		
3-4	70	43.84±3.44 (2:3)	4.09	<0.001
≥5	181	46.41±4.73 (1:3)	3.2	<0.001
Spontaneous abortion (among gravid women)				
Ever	129	44.88±4.13	2.05	<0.05
Never	143	46.03±4.89		
Age at menarche				
11 or less	49	43.35±3.31 (1:3)	5.75	<0.001
12-14	138	44.37±4.53 (2:3)	5.01	<0.001
15 or more	94	47.39±4.48		
Menstruation status				
Regular	250	45.55±4.54	2.61	<0.01
Irregular	32	43.31±4.63		
Menstruation period				
21 or less	65	43.26±3.51 (1:2)	3.26	<0.001
22-32	143	45.32±4.51 (2:3)	6.07	<0.001
33 or more	42	49.81±2.92 (1:3)	10.04	<0.001
Mens. bleeding period				
5 or less days	83	43.01±3.38 (1:2)	5.37	<0.001
6-8 days	135	46.05±4.43 (2:3)	4.53	<0.001
9 or more days	31	49.94±3.62 (1:3)	9.53	<0.001
Oral contraceptive use				
Enver	84	43.14±3.96	5.33	<0.001
Never	198	46.19±4.57		

Table 1. Relationships between age at natural menopause and characteristics in women aged 35-54 years.

had higher age at menopause than smoking women (N=40, 43.43 years), (t=2.79, P<0.01).

Body Mass Index: There was a statistically significant relationships between body mass index and age at

menopause, The differences between chronic energy deficiency group (41.22 years) and both normal (43.52 years) and obese (50.7 years) groups, and the difference between normal and obese groups are significant

($t=1.99$, $P<0.05$; $t=15.94$, $P<0.001$; $t=11.32$, $P<0.001$, respectively).

Matirial Status: The mean age at menopause in currently married (N:214), seperated (N=61), and unmarried (N:7) women were found to be 45.63, 44.79 and 38.7 ± 1.79 years, respectively. The differences (between married and unmarried; widowed and unmarried women) were statistically significant ($t=4.04$, $P<0.001$; $t=3.46$, $P<0.001$, respectively).

Parity: The mean age at menopause in parous women was 45.42 years compared with 40.33 years for nulliparous women. The difference was significant ($t=3.84$, $p<0.001$). A trend toward later menopausal age with increasing parity was found, with mean age at menopause of 43.36, 44.49 and 46.85 years for women with 1 or 2, 3 or 4 and 5 or more live births. The differences between women with 1 or 2 and 5 or more live births, women with 3 or 4 and 5 or more live births are statistically significant ($t=4.44$, $P<0.001$; $t=3.98$, $P<0.001$, respectively).

Age at first birth: Among parous women, those who had their first birth at age 19 and younger (46.82 years) had a statistically significant more age at menopause than those who had their first birth at age 20 to 29 (44.23 years) ($t=4.79$, $P<0.001$).

Gravidity: A trend toward later menopausal age with increasing gravidity was observed, with mean age at menopause of 42.66, 43.84 and 46.41 years for women with 1 or 2, 3 or 4 and 5 or more gravidity. Differences between women with 1 or 2 and 5 or more gravidity, women with 3 or 4 and 5 or more are significant ($t=3.2$, $P<0.001$; $t=4.09$, $P<0.001$ respectively).

Spontaneous abortion: The mean age at menopause for women of spontaneous abortion was 44.88 years compared with 46.03 years for women without spontaneous abortion. The difference was significant ($t=2.05$, $P<0.05$).

Age at menarche: Women who had their age at menarche 11 or lesser (43.35 years) and 12-14 (44.37 years) had statistically significant lesser age at menopause than those who had their age at menarche 15 or more (47.39 years) ($t=5.75$, $p<0.001$; $t=5.01$, $p<0.001$, respectively).

Menstruating: The mean age at menopause for women of regular menstruating periods was 45.55 years compared with 43.81 years for women of irregular menstruating periods. The difference was significant ($t=2.61$, $p<0.01$).

A trend toward later menopausal age with increasing

menstrual period in women with regular menstrual period was found, with mean age at menopause of 43.26, 45.32 and 49.81 years for women with 21 or lesser days, 22-32 days and 33 or more days menstrual periods. The differences were statistically significant ($t=3.26$, $p<0.01$; $t=10.04$, $p<0.001$; $t=6.07$, $P<0.001$ respectively).

A trend toward later menopausal age with increasing menstruation bleeding period in women with regular menstrual period was found, with mean age at menopause of 43.01, 46.05 and 49.94 years for women with 5 or lesser days, 6-8 days, and 9 or more days menstruation bleeding periods. The differences were statistically significant ($t=5.37$, $p<0.001$; $t=9.53$, $p<0.001$; $t=4.53$, $p<0.001$, respectively).

Oral contraceptive use: The women who use oral contraceptive (43.14 years) and statistically significant lesser age at menopause than those who don't use (46.19 years) ($t=5.33$, $p<0.001$).

Discussion

Some studies have shown relationship between smoking and menopausal age (4, 8, 9). In our study, smokers had also a significantly earlier menopause than women who had never smoked. This finding may be due to toxic effect of smoking on ovarian function, probably by increasing the rate of atresia (10).

In the present study, the obese women had higher age at menopause than both normal women and women with chronic energy deficiency. In obese women, sex hormone binding globulin is decreased and result in increased estrogen and decreased FSH (11). Decreased FSH may cause inhibition of follicle exhaustion and higher age at menopause in obese women.

A statistically strong association between marital status and menopausal age was observed. Similar results were reported in several studies, in which single women had earlier age at menopause than married women (6,8).

In the present study, nulliparous women had earlier age at menopause than parous women and there were positive relationships between age at menopause and both parity and gravidity. Several previous studies reported that parous women have menopause at a later age compared with nulliparous women (1, 6, 8, 12, 13), although others found no association (8, 14). Lower parity could potentially have an effect rather than a direct cause of early menopause. The cessation of normal menstrual periods and follicle exhaustion in parous or gravid women may cause a later menopausal age.

Among parous women, negative relationship between age at first birth and age at menopause was found. Three other studies found no association between age at first birth and age at menopause (1, 6, 15). In the light of these findings, the age at first birth may have not direct effect on age at menopause, but probably women with earlier age at first birth have more parity and more gravidity. Therefore, women with earlier age at first birth may have a later menopause.

In one previous study, it was reported that spontaneous abortion don't affect natural age at menopause (1). However, in our study it was found that the women with spontaneous abortion had a earlier menopausal age. This factor needs to be the subject of further and more advanced research.

In the presents study, a positive relationship between age at menopause and age at menarche detected, but previous studies is not consistent our study (1, 6, 15, 16). Earlier menopausal age in women with early age at

menarche may be due to earlier starting of follicle exhaustion. But this entity needs more advanced research.

A few studies have examined the relation between menstrual cycle characteristics and age at menopause (1, 17, 18). Whelan et al. (1) examined on the 561 women who a median cycle length was between 26 and 32 days. They found that women who a median cycle length was less than 26 days at ages 25-35 years reached menopause 1.4 years earlier than those with cycles between 26 and 32 days. These findings are consistent with our results.

One study showed that long duration of oral contraceptive use delayed menopausal age by suppression of ovulation (12). However, in our study, it was found that oral contraceptive use caused a earlier age at menopause. In East Anatolia, oral contraceptive use is not common in parous and gravid women. Therefore, the women who don't use oral contraceptive may have a later menopausal age. This entity needs more advanced research.

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