Afr J Med med. Sci. (1990) 19, 133–137

Symptomatology and hormone profile of menopausal Nigerians

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Summary

The alterations in the hormonal levels during menopause have been studied in Nigerian women. There is a significant decrease in oestradiol level of early menopausal and late menopausal women while the testosterone level increased ($P < 0.01$). The luteinizing hormone (LH) and follicle-stimulating hormone (FSH) showed significant elevation ($P < 0.01$). The elevation of FSH is about 14 times higher in early menopausal women and 16 times higher in late menopausal women when compared to the level in the control. LH, however, showed an elevation eight times higher in early menopausal women and 12 times higher in late menopausal women. The level of these hormones, the intensity of climacteric symptoms among menopausal Nigerian women and attainable age of menopause were found to be the same as in Caucasians.

Résumé

Les variations du niveau d'hormones des femmes Nigérianes pendant la ménopause ont fait l'objet d'une étude. On observe une réduction notable du niveau d'estradiol chez les femmes au stade initial et stade final de la ménopause tandis que le niveau de testostérone croît ($P < 0.01$). L'hormone de lutéinisation et celle de stimulation de follicle montrent une croissance élevée ($P < 0.01$). La croissance de l'hormone de stimulation de follicle est 14 fois plus élevée pour les femmes au stade initial et 16 fois plus élevée pour celles au stade finale de la ménopause que le niveau de controle. Toutefois le niveau de l'hormone de lutéinisation est huit fois plus élevée chez les femmes au début de la ménopause et 12 fois plus élevée chez les femmes en fin de cette expérience. Le niveau de ces hormones, l'intensité des symptomes climatériques chez les Nigérianes au début et vers la fin de la ménopause, ainsi que l'âge de la ménopause sont les mêmes que pour les caucasiennes.

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Introduction

Over recent years a great deal of attention has been paid to the female climacteric and much information is currently available. Despite this interest, some aspects of climacteric research have remained neglected. Most clinical observations have concentrated on women living in North America and West European countries and little information is available on hormonal levels and symptoms among menopausal African women. This basic lack of information as regards developing countries has provided stimulus for the present work. It was designed to study the hormone profile of menopausal Nigerians.

Subjects and methods

Subjects

The subjects of this study consisted of Nigerian women divided into the following groups.

Group 1. These were young women without any known medical problem in the age group of 17–25 yr classified as control. These women were subjected to routine gynaecological and physical examinations to confirm absence of disease condition by a gynaecologist ($n = 45$).

Group 2. These were women of the age group 45–55 yr, classified as early menopausal ($n = 42$).

Group 3. These were women of the age group 56–70 yr, classified as late menopausal subjects (n = 43).

Groups 2 and 3 were classified on the basis of (a) gynaecological examination and last menstrual period (LMP), (b) psychomotor alterations and (c) information obtained through a questionnaire. Among the symptoms studied were hot flushes, night sweats, backache, weight change, palpitations, dyspareunia, muscular weakness, etc. A checklist of these symptoms appears in Table 1.

Some of the subjects were not well educated, so some sort of translation and explanation were done to assist them in their response to the questionnaire. Some of them were, however, interviewed.

Blood samples (15 ml) were taken from each subject. The separated serum was kept in a freezer until further assay for specific hormones (oestradiol, testosterone, follicle-stimulating hormone (FSH) and luteinizing hormone (LH)).

Also utilized were 20 cm^3 sterile disposable syringes, Gillette sterile hypodermic needles, disposable universal bottles for transportation

Table 1. Percentage of menopausal women and symptoms experienced

Symptom	Symptom type	Premenopausal control (%)	Early menopausal (%)	Late menopausal (%)
Hot flushes	Vasomotor	0	90	84
Night sweats	Vasomotor	0	60	40
Palpitations	Vasomotor	2	74	60
Backache	Somatic	1	58	46
Weight change	Somatic	2	30	4
Muscular weakness	Somatic	1	74	84
Flatulence	Somatic	1	40	30
Constipation	Somatic	3	44	60
Tender breasts	Somatic	1	80	74
Breast atrophy	Somatic	0	70	80
Dental problems	Somatic	1	30	36
Dyspareunia	Somatic	0	82	40
Joint pains	Somatic	0	17	36
Reduced libido	Somatic	1	80	96
Irritability	Psychosomatic	0	70	60
Insomnia	Psychological	1	65	80
Anxiety	Psychosomatic	1	85	70
Apprehension	Psychological	0	85	60
Fatigue	Psychosomatic	0	65	80
Giddiness	Psychosomatic	0	60	50
Skin atrophy	Somatic	0	65	85
Virility symptom/ hirsutism	Somatic	0	50	54
Vaginal dryness	Somatic	0	82	80
Senile vaginitis	Somatic	0	80	95
Scanty axillary/ pubic hairs	Somatic	1	70	80
Headaches	Psychosomatic	0	86	62
Depression	Psychological	1	78	68
Bad dreams/ nightmares	Psychological	0	68	60
Ring sensation	Psychosomatic	0	76	66
General arthropathy	Psychological	0	70	60
Amenorrhoea	Somatic	0	100	100

of blood samples, small storage bottles for serum storage, cotton wool, methylated spirits, and a four-page questionnaire completed by each subject.

Reagents

The radioimmunoassay kits and procedure used in this study were obtained from the World Health Organization collaboration centre for research and reference services in the immunoassay of hormones in human reproduction under the WHO matched-reagent programme (1985).

Results

On climacteric symptoms studied, Table 1 prepared from the questionnaire given to each subject shows the percentage of women currently experiencing such symptoms.

The hot flush was amongst the highest recorded symptom. In the early menopausal women 36% reported them on the face and neck and 54% in different locations. Late menopausal women had a slight change in the reported pattern: 14% had it round the face and neck and 22% in different locations and 48% all over the body. As the whole body sensation implies greater intensity, hot flush is definitely a menopausal symptom. No woman claimed that her libido had increased since menopause, most had lost their libido. Dyspareunia was a significant complaint (82% among the early menopausal women who were still sexually active). Vaginal dryness (82%) was a corresponding correlation. Most subjects had experienced breast atrophy though tender breasts was seen more in early menopausal women.

Somatic problems were more intense for most menopausal women, a finding suggesting that the symptoms arose from menopausal ovarian failure [1]. Psychological symptom types were a higher percentage for the early menopausal women, particularly anxiety and apprehension. However, the climacteric symptoms were conspicuously absent from the premenopausal (control) group. The average oestradiol value obtained for the control group was $0.02 \pm 4.87 \times 10^{-4}$ nmol/l, early menopausal was $0.11 \pm 4.87 \times 10^{-4}$ nmol/l, late menopausal was $0.009 \pm 2.2 \times 10^{-4}$ nmol/l (Table 2).

Testosterone value for the control was 0.712 ± 0.97 nmol/l, for early menopausal 0.928 ± 0.1 nmol/l, and 1.85 ± 0.27 nmol/l for late menopausal women. The gonadotrophin values showed the following profile: for FSH in controls it was 5.7 ± 0.43 IU/l, for late menopausal it was 85.76 ± 6.75 IU/l, and for early menopausal it was 70.3 ± 6.5 IU/l; for LH, it was 44.8 ± 7.4 IU/l for the early menopausal, 61.6 ± 8.3 IU/l for late menopausal and 5.6 ± 0.53 IU/l for the controls (Figs 1–4).

Discussion

Similar to Neugarten and Kraines [2] we have employed self-evaluation criteria and age to determine the menopausal status of the respondents. It is most likely that the only actual symptoms resulting from diminished ovarian activity are amenorrhoea and vasomotor instability as manifested by hot flushes. The psychosomatic/somatic changes found in a greater percentage among the early menopausal

Table 2. The mean values of the hormonal levels of premenopausal (control) early and late menopausal women

Hormone	Control	Early menopausal	Late menopausal	*F*	*P* value
Follicle-stimulating hormone (IU/l)	5.7 ± 0.43	70.3 ± 6.5	85.76 ± 6.75	17.7	≤ 0.01
Luteinizing hormone (IU/l)	5.6 ± 0.53	44.8 ± 1.39	61.6 ± 8.3	9–45	≤ 0.01
Oestradiol (nmol/l)	$0.02 \pm 4.87 \times 10^{-4}$	$0.011 \pm 1.4 \times 10^{-4}$	$0.009 \pm 2.2 \times 10^{-4}$	25	≤ 0.01
Testosterone (nmol/l)	0.712 ± 0.097	0.928 ± 0.1	1.85 ± 0.27	6–8	≤ 0.01

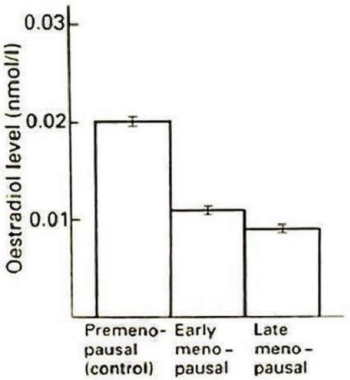

Fig. 1. Oestradiol levels in Nigerian premenopausal and menopausal women.

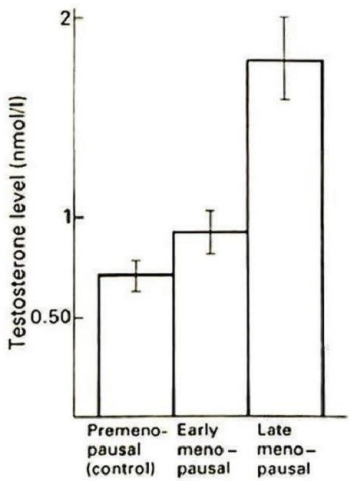

Fig. 2. Testosterone levels in Nigerian premenopausal and menopausal women.

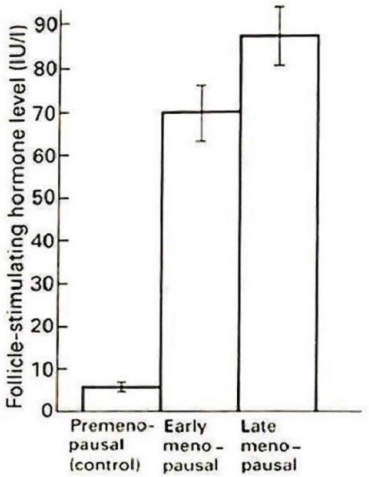

Fig. 3. Follicle-stimulating hormone levels in Nigerian premenopausal and menopausal women.

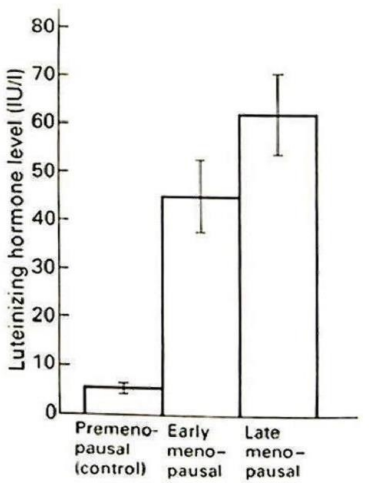

Fig. 4. Luteinizing hormone levels in Nigerian premenopausal and menopausal women.

women could be due to the fact that this category of women in the Nigerian society are in the busy phase. Fatigue and overexertion are part of their lives. Besides, the majority of these symptoms arose from menopausal ovarian failure [3]. However, the checklist shows that psychological problems are on a lower percentage for the late menopausal women. This finding corresponds to their status from a cultural point of view. Nigerian late-menopausal women seem to be more settled; they are either living comfortably with their son's family or are well settled in their trades having no worries about sending children to school and having less household duties, whereas those in early menopause are quite busy. It is not surprising that they age faster than their western counterparts [2].

The results have shown that the profiles of follicle-stimulating hormone and luteinizing hormone, oestradiol and testosterone in Nigerian menopausal women correspond to the findings by other investigators [4].

Oestradiol values are low since the main

circulating oestrogen is from extragonadal peripheral aromatization of androstenedione in menopausal women [5]. There is vasomotor instability and atrophy of the reproductive tract due to reduction in oestrogen production.

The menopausal ovaries secrete more testosterone than premenopausal gonads and they have been found to be able to convert precursor pregnonolone to testosterone, androstenedione and dehydroepiandrosterone [6].

During the normal menstrual cycle both FSH and LH levels fluctuate significantly. These fluctuations include early follicular-phase rise (particularly FSH), and the mid-cycle surge (particularly LH) of both gonadotrophins [7]. As women approach their menopause, FSH levels appear to increase above the normal range [8]. The values of FSH and LH obtained for early menopausal and late menopausal women in this study were significantly higher ($P < 0.01$) than those values obtained for the controls because of the removal of the negative feedback inhibition normally exercised by oestrogen on the hypothalamopituitary system. The high FSH levels are thought to be due to the slower clearance rate of this gonadotrophin [4].

Higher testosterone values could be responsible for defeminization such as the hirsutism and virilism, notable in some early menopausal/late menopausal women.

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(*Accepted* 10 *May* 1989)