ASSESSMENT OF IRON STATUS AMONG SUDANESE MENOPAUSAL WOMEN

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ABSTRACT

Menopause is very important turning phase in the life of a female and is associated with hormonal changes. These hormones affect the overall personality however menopause is also associated with varied menopausal symptoms. Menopause women are a high risk group for iron level disturbance in your bodies.

This was descriptive cross-sectional study aimed to determine the serum iron level in menopause women. Following informed consent, fifty subjects in menopause period, and sex matched fifty healthy premenopausal subjects as controls were enrolled. Serum iron was measured using spectrophotometer.

Mean of serum iron level was significantly lower among menopause women when compared with the premenopausal women (control) (P.value 0.04). There was significant changing in serum iron level according to age duration (P.value 0.000).

We observed changes in iron level between menopausal women when compared with premenopausal women, this study confirm iron deficiency among menopause women. Also observed that the level of serum iron decreased in certain age just after beginning menopause then increased in certain age and return also to decrease with increased of age.

Keywords:
Premenopause, Menopause, Serum Iron, Sudan.

1. INTRODUCTION

Menstruation is a unique physiological phenomenon in young women, characterized by the periodic high levels of estrogen and the shedding of the endometrium. Because of this monthly blood loss, iron deficiency is prevalent in premenopausal women \(^{(1)}\).

Menopause is a natural aging process during which a woman passes from the reproductive to the non-reproductive years. Despite this natural process, many women still experience menopausal symptoms such as vasomotor episodes or ‘hot flashes’ urinary incontinence, vaginal change, breast change, thinning of the skin, bone loss, as well as path physiologic conditions such as bone mineral density and drying of skin \(^{(2)}\).

Menopause refers to the permanent cessation of menstruation due to loss of ovarian follicular activity. It results in a decrease in estrogen secretion that is responsible for most of the features seen in menopausal women \(^{(3)}\).

Iron is essential for oxygen transport, electron transfer reactions, gene regulation, and regulation of cell growth and differentiation. Excessive iron, however, can damage tissues by catalyzing the conversion of hydrogen peroxide to free radical ions that attack cellular membranes, proteins, and DNA \(^{(4-7)}\). Although healthy levels of iron in human body have not yet been established, it is conceivable that iron imbalance (deficiency or overload) could cause adverse health effects, for example it has been postulated that iron deficiency in young women plays a role in a high breast cancer recurrence in young patients, and increased iron contributes to a high breast cancer incidence in postmenopausal women \(^{(10)}\). Whereas estrogen decreases because of the cessation of ovarian functions, iron increases as a result of decreasing menstrual periods \(^{(11-12)}\).

2. MATERIALS AND METHODS

This was a cross-sectional descriptive study for data collected from woman in Shendi locality, river Nile state, northern Sudan. Study was carried out on one hundred women, fifty of them with aged 46 years and more were menopausal (women were defined as menopausal if they had no menses for \(\geq 12\) months), while fifty women, aged 20-35 years were premenopausal and served as control (We excluded women who were using estrogen or progestin therapy at the premenopausal or menopausal). Menopausal women included in the study group were amenorrhoetic due to a natural cause without a hysterectomy or other procedure that would have stopped their menses. The investigation was performed on venous blood sample drawn into plain tubes then centrifuge at \(20^\circ\)C, 1500g for 10 minutes to collect serum sample, then estimated the iron spectrophotometrically due to color that performed by this method in which transferrin bound ferric iron in the sample are release by guanidinium and reduced to ferrous by mean of hydroxylamine, ferrous iron react with ferrozine forming a coloured complex. The study was undertaken after obtaining consent from the participants. Data was analyzed by using SPSS-20 (statistical packaged for social science) computer program.
3. RESULTS AND DISCUSSION

Table 1: Show the mean of serum iron among menopause and premenopause women

<table>
<thead>
<tr>
<th>State</th>
<th>Mean µg/dl</th>
<th>P.value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menopause</td>
<td>59.1 µg/dl</td>
<td>0.04</td>
</tr>
<tr>
<td>Premenopause</td>
<td>61.4 µg/dl</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Show the change of the mean of serum iron according to age group

<table>
<thead>
<tr>
<th>age group</th>
<th>Mean µg/dl</th>
<th>P.value</th>
</tr>
</thead>
<tbody>
<tr>
<td>46-51 years</td>
<td>53.9 µg/dl</td>
<td>0.000</td>
</tr>
<tr>
<td>52-57 years</td>
<td>69.8 µg/dl</td>
<td></td>
</tr>
<tr>
<td>More than 57 years</td>
<td>55.7 µg/dl</td>
<td></td>
</tr>
</tbody>
</table>

In this study there was a decreased in mean of the serum iron (59.1 µg/dl) in menopausal women when compared with premenopausal women (61.4 µg/dl) (P.value 0.04). This result disagreement with previous studies (5-6).

There was significant changing in serum iron level according to age duration in which its decreased in the period just after menopause beginning (46 – 51 years), mean serum iron was (53.9 µg/dl), then increased to reach (69.8 µg/dl) in the period (52 – 57 years) and finally decreased to (55.7 µg/dl) in the period more than 57 years old with (P.value 0.000). In my opinion the increased in the period after menopause beginning was due to stop of menstrual time in which the iron loss during menstrual cycle, then decreased in iron level due to aging process. Menstruation is a unique physiological phenomenon in young women, characterized by the periodic high levels of estrogen and the shedding of the endometrium. Because of this monthly blood loss, iron deficiency is prevalent in premenopausal women. During perimenopause, fewer eggs exist for the ovaries to stimulate, and menstrual periods become irregular. This period of fluctuation can last up to 10 years. Cessation of menstruation marks the later stage of perimenopause. Because iron is no longer lost through menstruation, it accumulates in the body (1), also another previous study showed increased serum ferritin from 4.8 mg/kg bodyweight at the beginning of perimenopause at age 45 years to 12 mg/kg body weight after menopause at age 60 years, which lead to increase serum iron in menopause women (9), which insure that increasing of iron level after beginning menopausal period, but this increased will stop due to aging process. Also in the present study decreased in iron level in menopausal women with age more than 57 years old agreement with fact that explain by previous study in which there was little direct evidence of a high prevalence of iron deficiency in the elderly (8).
4. CONCLUSION

We observed changes in iron level between menopausal women when compared with premenopausal women, this study confirm iron deficiency among menopause women. Also observed that the level of serum iron decreased in certain age just after beginning menopause then increased in certain age and return also to decrease with increased of age.

5. REFERENCES