

ORIGINAL PAPER

Health-related quality of life following surgical menopause and following gonadotrophin-releasing hormone analogue-induced pseudomenopause

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(Received 7 January 2009; revised 26 April 2009; accepted 27 April 2009)

Abstract

Objective. To compare the health-related quality of life (HRQOL) following surgical menopause with that following gonadotrophin-releasing hormone analogue (GnRHa)-induced pseudomenopause.

Materials and methods. Thirty-one women who received 3.75 mg of triptorelin injection subcutaneously every 4 weeks for 12 weeks after conservative surgery for severe endometriosis were reviewed (Group A). Thirty women who had surgical menopause for non-malignant conditions were reviewed after 12 weeks (Group B). Menopause-rating scale (MRS II) was used to assess the HRQOL.

Result. Surgical menopause caused significant deterioration of HRQOL after 12 weeks, as compared to that caused by the pseudomenopause induced by the GnRHa injection (total MRS score: Group A, 16.60; Group B, 20.41; $p = 0.04$). Among the three subscales, there were no differences in the scores of somato-vegetative symptoms (Group A, 6.63; Group B, 6.90; $p = 0.72$) and urogenital symptoms (Group A, 3.50; Group B, 4.80; $p = 0.06$). Psychological symptoms showed significant difference (Group A, 6.46; Group B, 8.70; $p = 0.01$).

Conclusion. Surgical menopause causes significant deterioration of HRQOL than that caused by the pseudomenopause state of GnRHa injection. Psychological symptoms are more pronounced in surgical menopause.

Keywords: Health-related quality of life, surgical menopause, pseudomenopause

Introduction

Hypoestrogenemia in a woman can cause severe symptoms of oestrogen deficiency, leads to significant biological and psychological effects on her health and well-being and affects the health-related quality of life (HRQOL).

HRQOL evaluates patient's satisfaction with a specific level of function and represents the functional effects of an illness and its treatment on a woman, as perceived by the woman herself [1]. Nowadays, many clinicians are incorporating scales to assess HRQOL into their routine clinical practices and studies [2].

Surgical menopause in a relatively younger woman can cause deterioration of HRQOL because of hypoestrogenemia. Gonadotrophin-releasing hormone analogue (GnRHa) injections are used in many

situations like endometriosis, fibroids, before assisted reproductive techniques (ART) procedures, etc. to induce a state of hypoestrogenemia by suppressing down-regulating pituitary secretion of FSH and LH. In this situation, HRQOL is also affected and this is called 'pseudomenopause.'

To assess the HRQOL in a menopausal woman, the Menopause rating scale (MRS) was developed in early 1990s in response to the lack of standardised scales to measure the severity of menopausal symptoms and their impact on HRQOL. A woman can easily complete the scale herself. Evidence exists to show that the MRS effectively measures and compares the HRQOL of menopausal woman in different regions and over time. The MRS scale has been shown to have high reliability, excellent applicability and sufficiently good repeatability [3,4].

This study aims to compare the HRQOL in these two types of hypoestrogenic states, utilising menopause-rating scale (MRS-II).

Materials and methods

This is a clinical observational study. Ethics committee of S. C. Das Memorial Medical and Research Center approved the study. Verbal consent was taken from each woman for the study.

Thirty-one women who underwent conservative surgery for severe dysmenorrhoea due to severe endometriosis were given GnRH α injection post-operatively (3.75 mg of triptorelin subcutaneously every 4 weeks for 12 weeks) [Ferring GmbH, Wittland, Kiel, Germany] and were reviewed after the last injection. Therapy began on Day 1 of the first 5 days of the first postoperative menstrual cycle (Group A). All women had serum oestradiol levels less than 20 pg/ml at the time of review, indicating adequate ovarian suppression. Thirty women who underwent abdominal total hysterectomy with bilateral salpingo-oophorectomy for various benign gynecological conditions were reviewed 3 months after the surgery (Group B). Age and body weight of each woman were recorded. Each woman was asked to complete the MRS-II scale herself at the time of review. All the studied women were graduates. In Group A, six women were married and nulliparous. In Group B, all women were parous.

The MRS lists 11 symptoms/complaints. Each symptom can be scored 0 (no complaint) up to 4 points (most severe). The woman provides her personal perception for the symptom by checking one of the five possible boxes of 'severity' for each of the items.

The MRS has three independent subscales: (1) somato-vegetative, (2) psychological and (3) urogenital components.

Exclusion criteria

1. Women who had already taken some form of oestrogenic preparations in the preceding months.
2. Women with severe medical disorders such as renal diseases, liver diseases, cardiac diseases, uncontrolled diabetes or hypertension.
3. Women on psychotropic medications.
4. Women who had radical surgeries for malignancy were not studied.

Statistical analysis

Levene's analysis was done to assess equality of variances, and then *t*-test was done to compare the results at 5% level of significance.

Results

Table I shows the average values of the clinical parameters of the studied women, and also the average values of the three sub-scales and the total scores of the MRS scale and their statistical significances. This table shows that the two groups differed significantly in age, but not in weight. Average age of patients in Group A was significantly less than that of Group B [Group A: 30.7 (3.6); Group B: 38.2 (2.9); $p=0.0001$]. There was significant difference in total MRS score (Group A: 16.60; Group B: 20.41; $p=0.04$). Among the three subscales, somato-vegetative symptoms showed no difference (Group A: 6.63; Group B: 6.90; $p=0.72$); psychological symptoms showed significant difference (Group A: 6.46; Group B: 8.70; $p=0.01$); urogenital symptoms showed no difference (Group A: 3.50; Group B: 4.80; $p=0.06$).

Discussion

Hypoestrogenism in younger women can produce significant symptoms of oestrogen deficiency affecting the quality of life. In clinical practice, there are two important situations where hypoestrogenic state is induced iatrogenically by: (a) surgical menopause, (b) GnRH α injection.

Gulseren et al. [5] had stressed the need for a menopause-specific instrument to measure the quality of life. In this study, MRS II was used to assess the HRQOL.

This study shows that although there is hypoestrogenemia in both the conditions, there is difference in overall quality of life between the two situations ($p=0.04$). Following surgical menopause, the psychological symptoms are more severe ($p=0.01$) than after use of GnRH α . This study shows that there are no differences in somato-vegetative and urogenital symptoms between the two groups ($p=0.72$ and 0.06 , respectively).

Table I. Demographical characteristics and the three subscales and total MRS scores.

| Parameters | Group A (<i>n</i> = 30) | Group B (<i>n</i> = 31) | <i>t</i> | <i>p</i> |
|----------------------------|-----------------------------|-----------------------------|----------|----------|
| Age (years) | 30.7 (3.6) | 38.2 (2.9) | -8.92 | 0.000 |
| Weight (kg) | 59.2 (9.4) | 63.7 (9.3) | -1.87 | 0.06 |
| Somato-vegetative symptoms | 6.6 (2.7) | 6.9 (3.3) | -3.48 | 0.72 |
| Psychological symptoms | 6.5 (3.4) | 8.7 (3.1) | -2.68 | 0.01 |
| Urogenital symptoms | 3.5 (2.5) | 4.8 (2.9) | -1.88 | 0.06 |
| Total MRS score | 16.6 (6.8) | 20.4 (7.9) | -2.02 | 0.04 |

Data are mean (SD).

n, number; SD, standard deviation.

In this study, the aim was to assess the effect of the two different conditions of hypoestrogenemia in women on HRQOL. One can raise the question that hysterectomy itself may affect the HRQOL. But here the surgery was done for benign gynecological conditions in every case to enhance the quality of life. Similarly, patients in Group A who received GnRHa injection for endometriosis also had conservative surgery followed by hormone therapy to get relief from severe pain. Studies have shown that in most women suffering from benign gynecological conditions, quality of life is improved within a month after hysterectomy and surgery does not produce any psychological disturbances in otherwise psychologically healthy women [6].

It should be noted that the surgical menopausal state is a hypergonadotrophic situation, while the hypoestrogenic state induced by GnRHa injection is a hypogonadotrophic state. Plasma LH has been found to be low in depressed postmenopausal women, compared to postmenopausal women without depression [7]. This may be due to reduced hypothalamic noradrenergic activity in such patients. Whether this observation is a mere stress response or due to abnormal LHRH secretion is open to question.

There are biological differences between the two groups of patients studied. The role of central biogenic amines in the regulation of LH release in humans is still unclear, but LH release is closely related to feed back control of estrogens on the pituitary and hypothalamus. Whether there is a defect in this feedback regulation or it is the result of central neurotransmitter defect remains unclear [8]. Young and Korszun [9], on the other hand, did not find any abnormality in LH activity in depression. They reported that complete elimination of monthly cycling with leuprolide improved mood. Harlow et al. [10] found higher levels of FSH and LH and lower levels of oestradiol in women with a lifetime history of depression. Freeman et al. [11] had found that depression was more likely in women with rapidly increasing FSH levels. More studies are needed to find out the role of hypoestrogenemia on hippocampal function and on the effects of hypoestrogenemia on neurogenesis even in adults because adult neurogenesis represents a distinctive form of structural plasticity that can be regulated by the environment [12]. New neurons play an important role in hippocampal functions. This study though small, also shows that gonadotrophin levels modulate psychological symptoms despite hypoestrogenemia.

Further studies are needed to clarify whether gonadotrophin or neurotransmitter is important.

Summary and conclusion

HRQOL of 31 women having pseudomenopause by GnRHa injection were compared with that of 30 women who had surgical menopause. Overall quality of life is significantly more affected in surgical menopause. Psychological symptoms are more pronounced in surgical menopause than in pseudomenopause induced by GnRHa injection.

Declaration of interest: The author reports no conflicts of interest. The author alone is responsible for the content and writing of the paper.

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