

## Short Communication

# Higher incidence of hysterectomy and oophorectomy in women suffering from clinical depression: Retrospective chart review

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The aim of the present study was to retrospectively evaluate women who were admitted to Hiroshima University Hospital, Department of Psychiatry and Neurosciences, from 1979 to 2008. The women were classified as 'depressed women' ( $n = 159$ ; mean age,  $52.3 \pm 5.7$  years) or 'non-depressed women' ( $n = 182$ ; mean age,  $51.5 \pm 4.5$  years). A total of 14.5% of the depressed women and 3.3% of the non-depressed women had a hysterectomy and/or

oophorectomy; this difference was statistically significant ( $P = 0.0003$ ). This is consistent with previous reported information as well as clinical experience that depressed women had a higher incidence of hysterectomy and/or oophorectomy.

**Key words:** affective disorder, depression, hysterectomy, menopausal woman, oophorectomy.

THE LIFETIME INCIDENCE of mood disorders in women is approximately twice that of men.<sup>1</sup> There are two peaks for the first onset of depression in women, during the childbearing years and after age 45.<sup>1</sup> An endocrine mechanism, especially estrogen withdrawal, related to the menopausal transition and perimenopause is considered one factor in the pathophysiology of perimenopausal depression.<sup>2</sup> Gynecologic operations, such as hysterectomy and oophorectomy, also lead to estrogen withdrawal. A higher than expected incidence of depressive symptoms or minor depression has been observed in surgically menopausal women.<sup>3</sup> Factors other than an endocrine mechanism were also assumed to be among the causes of depression after hysterectomy and oophorectomy.<sup>4,5</sup> Recent prospective studies have emphasized that hysterectomy and oophorectomy resulted in positive outcomes, improvement of

pelvic pain, pressure symptoms, urinary incontinence, sexual function, depression and anxiety.<sup>6</sup> The relationship between the experience of hysterectomy or oophorectomy and depression is still controversial and the mechanism of depression associated with hysterectomy and oophorectomy remains unknown.

We investigated women who were admitted to a Japanese hospital psychiatric unit for depression compared to other psychiatric diagnoses as to whether they had a hysterectomy or oophorectomy, to determine the relationship between the experience of hysterectomy or oophorectomy and depression.

## METHOD

### Subjects

All the women in the present study were admitted to Hiroshima University Hospital, Department of Psychiatry and Neurosciences, between 1979 and 2008. Their charts were retrospectively reviewed and classified as 'depressed women' or 'non-depressed women'. 'Depressed women' were defined as women who met the criteria for affective disorder described in the

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ICD-10 classification of mental and behavioral disorders as determined by a clinical interview when they were admitted. The diagnosis of affective disorder included major depression, bipolar disorder with current depressive episode, persistent affective disorder and other affective disorder. Women were excluded if they had been suffering from both affective disorder and another psychiatric disorder. Women who had shown depressive symptoms before the experience of hysterectomy or oophorectomy were excluded. If the women had been admitted more than twice to Hiroshima University Hospital, only the first admission was examined. If the women had suffered recurrent depressive disorder, only the first episode of depression was examined. Non-depressed women were defined as women who had suffered a psychiatric disorder other than affective disorder. The psychiatric diagnoses of the 'non-depressed women' were as follows: organic mental disorders; mental and behavioral disorders due to psychoactive substance use; schizophrenia, schizotypal and delusional disorders; anxiety, neurotic, stress-related and somatoform disorders; eating and sleep disorders; adult personality and behavior disorders; and mental retardation. The diagnoses of gynecologic disorders are shown in Table 1. This study was carried out according to the guideline of the Ethics Committee of Hiroshima University Hospital.

### Procedure

These two groups were compared in three respects: (i) average age at admission; (ii) number of women who experienced hysterectomy and/or oophorectomy; and (iii) number of women who had a family history of psychiatric disorder. We also extracted the age of onset of psychiatric disorder, the age at hysterectomy or oophorectomy, psychiatric diagnosis, and gynecologic diagnosis from the medical charts. The hysterectomy or oophorectomy was performed within 10 years before the onset of psychiatric disorder.

### Statistical analysis

Parametric data are reported as mean  $\pm$  SD. Student's *t*-test was used to compare mean differences in parametric data between groups. Fisher's exact test was used to compare non-parametric numerical data. The significance level was set at  $P < 0.05$  (two-tailed test). Statistical analysis of data was carried out with Statcel

(2nd edn) in Excel for Windows and StatView 5.0 for Macintosh.

### RESULTS

The mean age at admission of these two groups of women did not significantly differ (Table 1). **The depressed women suffering from affective disorder were fourfold more likely to have had a hysterectomy and/or oophorectomy than the non-depressed women who suffered from other psychiatric disorders (14.5% vs 3.3%;  $P = 0.0003$ ).**

### DISCUSSION

Review of the literature did not find any reports showing that the incidence of hysterectomy or oophorectomy in psychiatric patients with diagnoses other than affective disorder was different from that of the general population. Therefore we considered that the non-depressed women were appropriate for the control group of this study.

Several studies have reported the effects of hysterectomy and oophorectomy on psychiatric symptoms and quality of life.<sup>6–8</sup> These studies, as well as our clinical experience, suggested that women who had a hysterectomy and/or oophorectomy had a higher incidence of depression, although paradoxically this surgery resulted in a significant improvement of depressive symptoms that had been observed before the operation. The precise mechanism accounting for the high incidence of hysterectomy and oophorectomy in patients with depression is not known, but one possible explanation is that the low estrogen state after hysterectomy and oophorectomy may play a role. Kugaya *et al.* showed, using positron emission tomography, that estrogen increases serotonin 2A receptor binding in human prefrontal regions, and suggested that estrogen played some role in depression partly involving the serotonin system.<sup>9</sup> Bilateral oophorectomy leads to a marked decrease in estrogen levels and might be one of the contributors to developing depression. In the present study, however, the incidence of bilateral oophorectomy did not statistically differ between the groups, although this may be attributed to the small number of participants who had this procedure (Table 1). Alternatively, factors other than an endocrine mechanism, such as loss of fertility, poorer body image, or worsened sexual function, might also be involved in developing depression after hysterectomy and/or oophorectomy.<sup>4,5,10–13</sup>

**Table 1.** Characterization and incidence of hysterectomy and/or oophorectomy vs presence of depression

		Depressed ( <i>n</i> = 159)	Non-depressed ( <i>n</i> = 182)	<i>P</i>
Age at admission (years) (mean ± SD)		52.3 ± 5.7	51.5 ± 4.5	0.0736
Psychiatric diagnosis <sup>†</sup> , <i>n</i>	F0: organic mental disorder		47	
	F1: psychoactive substance use		4	
	F2: schizophrenia		68	
	F3: affective disorder	159		
	F4: anxiety disorder		50	
	F5: eating disorder and sleep disturbance		4	
	F6: personality disorder		8	
	F7: mental retardation		1	
Gynecologic diagnosis, <i>n</i>	Uterus myomatosus	30	12	
	Ovarian cyst	7	2	
	Uterus cancer	4	3	
	Ovarian cancer	2	0	
	Extrauterine pregnancy	1	0	
	Dysfunctional bleeding	1	0	
	Endometriosis	1	1	
	Uterine prolapse	1	0	
History of hysterectomy	<i>n</i> (%)	18 (11.3)	6 (3.3)	0.0050
	Age at operation (years), mean ± SD	45.7 ± 5.1	46.2 ± 7.9	0.8961
	Age at onset of psychiatric disorder (years), mean ± SD	48.2 ± 5.8	48.1 ± 8.7	0.9333
History of oophorectomy	<i>n</i> (%)	10 (6.3)	3 (1.6)	0.0434
	Age at operation (years), mean ± SD	44.2 ± 6.4	44.0 ± 10.5	0.9710
	Age at onset of psychiatric disorder (years), mean ± SD	46.2 ± 4.9	44.3 ± 10.5	0.7027
Incidence of hysterectomy and/or oophorectomy, <i>n</i> (%)	Hysterectomy and/or oophorectomy	23 (14.5)	6 (3.3)	0.0003
	hysterectomy(+), oophorectomy(+)	5 (3.1)	3 (1.6)	0.4805
	hysterectomy(+), oophorectomy(–)	14 (8.8)	3 (1.6)	0.0026
	hysterectomy(–), oophorectomy(+)	5 (3.1)	0 (0)	0.2130
	hysterectomy(–), oophorectomy(–)	135 (84.9)	176 (96.7)	0.0002
	bilateral oophorectomy(+)	3 (1.9)	1 (0.5)	0.3424
Family history of psychiatric disorder, <i>n</i> (%)		57 (35.8)	52 (28.6)	0.1635

Student's *t*-test was used to compare mean age, and Fisher's exact test was used to compare the incidence of each operation and family history of psychiatric disorder.

†ICD-10 classification of mental and behavioral disorders criteria.

Depressed women were diagnosed as having affective disorder; non-depressed women were diagnosed as having psychiatric disorders other than affective disorder.

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