Preoperative anxiety and depression related to surgery for uterine cervical carcinoma in situ: comparison with benign gynecological conditions

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Summary Laser conization for uterine cervical carcinoma in situ (CIS) is designed to treat malignant tumors. Because the surgical stress is believed to be minimal, its impact on the patient’s mental status has not been elaborated. To clarify the impact of operation and a notice of diseases on mental health, anxiety and depression of patients scheduled for uterine conization and those scheduled for surgery for benign diseases was compared with HADS (Hospital Anxiety and Depression Scale).

Subjects were 348 Japanese female patients (55 with CIS and 293 with benign gynecologic diseases; ages, 41.6 ± 12.1 years) who had been admitted to undergo an operation. Each was asked to fill out the Japanese edition of HADS before surgery.

Compared with the patients with benign diseases in general or with ovarian cysts, those with CIS scored significantly lower on the total HADS, anxiety, and depression scales. Only the total and depression scores were significantly lower when compared with patients with myoma uteri. Comparison among surgical procedures showed that uterine conization scored the lowest on the total and anxiety scales and second to laparoscopic cystectomy of ovarian cysts on the depression score.

These results suggested that uterine conization, although intended for malignant tumors, is less likely to affect one’s mental health than surgical procedures conducted for benign gynecologic diseases. The impact of scheduled operation is supposed to be stronger than that of a notice of diseases.

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Key words: Anxiety, Carcinoma in situ, Depression, Gynecologic disease, Operation

Introduction

In treating an illness, paying attention to the mental state of the patient is just as important as the physical care. Duits, et al. stated that “preoperative anxiety and depression predicted postoperative psychological maladjustment”1). Because it has been reported that one’s preoperative mental state affects his immunological functions2), understanding and getting actively involved in the patient’s preoperative mental health are important in improving his postoperative quality of life3). We have reported earlier that gynecological diseases have an effect on a patient’s mental health4). For malignant diseases in contrast to benign diseases in particular, the global and depression scores were found to be high. For the factors responsible for this mental stress, the type of illness and surgical procedures that have been...
scheduled were considered: it is readily conceivable that the impact of malignant diseases and the stress of extensive surgery are considerable. The problem of mental health in the early stages of breast cancer has been investigated, but the details on the diseases and scheduled surgery and the factors causing differences have not been elucidated.

Laser conization is a surgical procedure in which a conical excision is made transvaginally, but without laparotomy, in the uterine cervix by using a laser knife to treat a uterine cervical cancer in its early stage, especially of cervical carcinoma in situ (CIS). The procedure usually requires within 30 minutes, so blood loss and surgical stress are minimal. It is basically possible to conserve the uterus and is attractive as a cancer reduction therapy. However it is intended to be applied to a malignant tumor and the patient is under a stress being aware of the gravity of the disease. Generally, diagnosis of cancer comes as a great shock to a patient and even a minimal surgery seems to give more mental stress than other gynecological surgery for benign conditions.

The intent of the present study was to investigate those factors that cause stress in inpatients scheduled for surgery by comparing mental stress experienced by a cancer patient prior to laser conization with other patients' experience preceding surgery for benign gynecological diseases with HADS (Hospital Anxiety and Depression Scale), a simple questionnaire filled out by the patient and used to evaluate the important factors in rating one's mental state, anxiety and depression.

**Subjects and Methods**

The subjects of this study were 348 Japanese patients (ages, 41.6 ± 12.1 years) who had been admitted to the Gynecology Ward, Tokyo Women's Medical University Hospital, for laser conization of uterine cervical carcinoma in situ or for surgery of benign gynecologic diseases (myoma uteri, uterine prolapse, and benign ovarian cysts) between September 2000 and February 2002. Those patients who had been treated in the psychiatric or psychosomatic department or were on psychotropic medication were excluded. The profiles of these patients are listed in Table 1. There was no significant age difference between those with CIS and those with benign diseases, but the patients with uterine prolapse were significantly older than those with CIS, myoma uteri, or ovarian cyst. Except for age, Fisher's exact probability test showed that there was also no significant difference between the patients with CIS and those with benign disease, but the numbers of children and menopause status were significantly different among the patients with CIS, myoma uteri, prolapse uteri, and ovarian cyst.

<table>
<thead>
<tr>
<th>Disease</th>
<th>N</th>
<th>Age (mean ± SD)</th>
<th>Marital status</th>
<th>Numbers of children</th>
<th>Menopause status</th>
<th>History of hospital admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinoma in situ</td>
<td>55</td>
<td>39.7 ± 12.5</td>
<td>42</td>
<td>11</td>
<td>24</td>
<td>45</td>
</tr>
<tr>
<td>Benign gynecologic diseases</td>
<td>293</td>
<td>41.9 ± 12.0</td>
<td>192</td>
<td>92</td>
<td>173</td>
<td>246</td>
</tr>
<tr>
<td>Myoma uteri</td>
<td>169</td>
<td>41.3 ± 7.9</td>
<td>109</td>
<td>54</td>
<td>103</td>
<td>161</td>
</tr>
<tr>
<td>Prolapse uteri</td>
<td>20</td>
<td>60.6 ± 9.4</td>
<td>20</td>
<td>0</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Ovarian cyst</td>
<td>104</td>
<td>39.3 ± 14.6</td>
<td>63</td>
<td>38</td>
<td>69</td>
<td>80</td>
</tr>
</tbody>
</table>

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Table 2 The HADS questionnaire

<p>| | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I feel tense or ‘wound up’</td>
</tr>
<tr>
<td>2.</td>
<td>I still enjoy the things I used to enjoy</td>
</tr>
<tr>
<td>3.</td>
<td>I get a sort of frightened feeling as if something awful is about to happen</td>
</tr>
<tr>
<td>4.</td>
<td>I can laugh and see the funny side of things</td>
</tr>
<tr>
<td>5.</td>
<td>Worrying thoughts go through my mind</td>
</tr>
<tr>
<td>6.</td>
<td>I feel cheerful</td>
</tr>
<tr>
<td>7.</td>
<td>I can sit at ease and feel relaxed</td>
</tr>
<tr>
<td>8.</td>
<td>I feel as if I am showed down</td>
</tr>
<tr>
<td>9.</td>
<td>I get a sort of frightened feeling like ‘butterflies’ in the stomach</td>
</tr>
<tr>
<td>10.</td>
<td>I have lost interest in my appearance</td>
</tr>
<tr>
<td>11.</td>
<td>I feel restless as if I have to be on the move</td>
</tr>
<tr>
<td>12.</td>
<td>I look forward with enjoyment to things</td>
</tr>
<tr>
<td>13.</td>
<td>I get sudden feeling of panic</td>
</tr>
<tr>
<td>14.</td>
<td>I can enjoy a good book or radio or TV programme</td>
</tr>
</tbody>
</table>

Following hospital admission, the thrust of the present study was explained to each patient, who subsequently gave oral informed consent and filled out the Japanese edition of HADS (Hospital Anxiety and Depression Scale)\(^8\). This is a questionnaire composed of 14 items to be filled out by the individual patient\(^9\). This questionnaire is composed of 2 scales; one for 7 items, all with odd numbers related to anxiety, and the other, also composed of 7 items but marked with even numbers, related to depression (Table 2). These are rated by using a 4-level scale (ranging from 0 to 3). The scores for each scale for anxiety and depression are rated between 0 and 21, with higher scores proportional to the acuteness of anxiety or depression. These psychiatric conditions were also categorized on a scale of 0 to 7 (non-cases), 8 to 10 (doubtful cases), and 11 to 21 (definitive cases). The sum of the scores for anxiety and depression is called the global HADS score. Compared with other psychological tests, it is simple and requires only 2 to 6 minutes to complete the form, thus minimizing the burden on the patient. In many studies, 100% acceptability of this test has been reported\(^10\). Validity of HADS has already been proven\(^10\)–\(^12\). It has been reported that the sensitivity and specificity of HADS in detecting anxiety or depression that would require treatment at a psychiatric department are over 0.8\(^10\). There is also a report that HADS is effective in detecting pre-surgical anxiety\(^13\).

All patients were told of the diagnosis and the surgical procedure that was scheduled, and admitted within 4 weeks after the diagnosis. The questionnaire was filled out within 3 days of admission and before surgery.

For statistical analyses, an unpaired t-test, ANOVA, chi-squared test, Fisher’s exact probability test and multiple regression analyses were conducted with the aid of analytical software, StatView-J version 5.0 (SAS Institute, Inc., USA). The significance level was set at \(p<0.05\).

**Results**

1. Comparison of HADS scores between carcinoma in situ and benign gynecologic diseases

The HADS global, anxiety, and depression scores for the groups with CIS and with benign gynecologic diseases are shown in Table 3. The former group showed significantly low figures for all categories in comparison with the latter group (global HADS score, \(t=2.464; df=346, p=0.014\); anxiety score, \(t=2.041, df=346, p=0.020\); depression score, \(t=2.334, df=346, p=0.020\)).

The percentages of definitive cases in anxiety score, depression score and the category of anxiety or depression were 5.5, 5.5 and 7.3%, respectively for the group with CIS ; and 8.2, 3.4, and 10.9%, respectively for the group with benign gynecologic diseases. Similarly, the doubtful cases were 21.8, 9.1, and 27.3% for the group with CIS ; and 27.6, 15.0, and 32.4% for the group with benign gynecologic diseases. The Chi-square test did not show any significant difference between the two groups in any sets of percentages. Except for the percentage of the definitive cases for the depression score, the figures for the group with CIS were consistently low.
2. Comparison of HADS scores with gynecologic diseases

Table 4 shows a comparison of the HADS scores for the groups with CIS, myoma uteri, uterine prolapse, and ovarian cyst. Compared with ovarian cyst, the group with CIS showed significantly low scores for all (global HADS score, $t = 2.875, df = 157, p = 0.005$; anxiety score, $t = 2.680, df = 157, p = 0.008$; and depression score, $t = 2.437, df = 157, p = 0.016$). The group with CIS also rated significantly lower for global HADS and depression scores and lower (though without a significant difference) for the anxiety score in comparison with myoma uteri (global HADS score, $t = 2.039, df = 222, p = 0.042$; anxiety score, $t = 1.321, df = 222, p = 0.187$; and depression score, $t = 2.088, df = 222, p = 0.038$). No significant difference was noted between the groups with CIS and with uterine prolapse. In comparing the myoma uteri and ovarian cyst groups, the score for anxiety was significantly higher for the latter; but there were no significant differences in the global HADS and depression scores of the two groups (global HADS score, $t = 1.691, df = 271, p = 0.092$; anxiety score, $t = 2.127, df = 271, p = 0.034$; and depression score, $t = 1.901, df = 271, p = 0.276$).

3. Comparisons of HADS scores among surgical methods

The HADS scores are compared in relation to various surgical procedures in Table 5. In the comparison of the global HADS score, conization for CIS showed the lowest value among all procedures. ANOVA exhibited a significant difference between abdominal total hysterectomy + salpingo-oophorectomy conducted for myoma uteri; and salpingo-oophorectomy and cystectomy conducted for ovarian cysts. In the comparison of the extent of anxiety also, conization showed the lowest score among all procedures, the only significant difference being from cystectomy. When the scores for depression were compared, conization exhibited a low score that was second only to laparoscopic surgery and showed significant differences from hysterectomy + salpingo-oophorectomy and surgical procedures conducted for ovarian cyst, except laparoscopic surgery.

4. Evaluation of factors affecting the HADS score

To investigate the factors affecting anxiety and depression related to scheduled surgery, a multiple regression analysis was conducted, using the
HADS anxiety or depression score as the dependent variable and disease, surgical procedure, and patient’s age as explanatory variables to see which of the two (disease or the surgical procedure) better explains the score. In this study, the HADS score was subdivided into one of three non-cases, doubtful cases, and definitive cases—and surgical procedures into one of four—open laparotomy, vaginal hysterectomy, laparoscopic surgery, and laser conization. Because the disease and surgical procedures were strongly correlated, they were not used simultaneously in the same model.

When the anxiety score was used as the dependent variable and the surgical procedure and age were used as explanatory variables, $R^2 = 0.012$, the standardized coefficient ($\beta$) was $-0.111$ ($p=0.0040$) for surgical procedure and $0.031$ ($p=0.567$) for age. When disease and age were used as explanatory variables, $R^2 = 0.001$, $\beta$ was $-0.020$ ($p=0.713$) for disease and $0.081$ ($p=0.741$) for age. When depression score was used as the dependent variable and surgical procedure and age were used as explanatory variables, $R^2 = 0.026$, $\beta$ was $-0.132$ ($p=0.014$) for the surgical procedure and $0.114$ ($p=0.034$) for age. With the disease and age being used as explanatory variables, $R^2 = 0.011$, $\beta$ was $-0.041$ ($p=0.440$) for the disease and $0.100$ ($p=0.064$) for age.

**Discussion**

Evidence suggests that a woman confronted with a new diagnosis of gynecologic cancer will experience a period of crisis. It has been said that 30 to 70% of these women exhibit psychological symptoms that would be diagnosed as moderate to severe depression or anxiety. If limited to early cancer, no reports in the field of gynecology have been found, but 45% of the patients with breast cancer in the early stage are known to be affected by psychiatric disorders. There is also a report in which it is stated that during the preoperative period, patients with benign diseases experience stress similar to that associated with malignant conditions. In the present study, even CIS is categorized in malignant disease, no significant difference was noted between the number and percentage of definitive and doubtful cases of the malignant and benign diseases; but compared with the benign disease group, the number of patients with CIS was small and their raw scores for both anxiety and depression were significantly low. Groenvold, et al. made the following observation: "Newly diagnosed breast cancer patients were even significantly
less anxious and less depressed as compared to randomly selected women from the general population" [6]. The present authors also reported that "HADS may not be suitable for use in the general population." In the current study, the observation was limited to the specialty of gynecology; and those patients with CIS were found to be less anxious and less depressed than those with other diseases. The reason may be that those with diseases such as myoma uteri and ovarian cyst often experience subjective symptoms and imaging diagnosis such as MRI and ultrasonic examination adds reality to an already threatening sensation, while the patients with CIS have few subjective symptoms so the impact normally brought about by cancer is relatively small. The surgery for uterine prolapse, which like in CIS does not require laparotomy, indicated raw scores that were lower than those for myoma uteri or ovarian cyst. Perhaps the fact that one expects the surgical stress to be low, rather than the impact of a diagnosis of a cancer, has more significant effect on one’s mental stress.

Compared HADS scores according to the type of surgery, it was found that conization was rated lowest in the global HADS and anxiety scores and its depression score was second lowest, next to laparoscopic cystectomy. The general trend was that the stress was proportional to the anticipated degree of surgical assault related to each procedure. Vaginal total hysterectomy conducted for myoma uteri was associated with higher scores than when the same procedure was conducted for uterine prolapse. The finding may be explained by the fact that the former is technically more difficult and may be switched to laparotomic procedure during the intraoperative period. To investigate the factors affecting the HADS scores further, the scores were categorized and multiple regression analyses were conducting by using disease, surgical procedure, and age as explanatory coefficients. It was found that for depression, the surgical procedure and age most adequately explain the variation in the score. Although R² is relatively small and one must be cautious in drawing a conclusion, this result supported the possibility that the impact of the surgical procedure is greater than that of the disease. The present study was conducted before surgery and no actual surgical stress was evaluated; or the evaluation was based on surgical stress as an image held by each patient. The results of the evaluation presented above at least suggested that the impact of the anticipated surgical stress, rather than that produced by a disease, had a more potent effect on mental stress in the presurgical stage.

It is believed that three sets of factors contribute to a psychological response in breast cancer patients: the sociocultural context in which treatment options are offered, the psychological and psychosocial factors that the women and their environment bring to the situation, and the medical factors or physical facts the women must confront in terms of disease stage, treatment, response, and clinical course [20]. Although further studies are needed to be certain that these factors are applicable to cases of gynecologic cancers, the present study touched upon the third factor: no reference was made to the second factor, psychological support. It is already known that some form of support is preferred to assure a better psychological outcome for the patients [21].

Contrary to expectations, the result obtained from the current study indicated that preoperative anxiety and depression are mild in patients with CIS. In the field of gynecology, however, it has been reported that even in minor surgery, anxiolysis has a good effect on postoperative pain or the recovery process [22]. Furthermore, the results indicated that about 10% of the patients in the group with CIS were found to be definitive.
cases. Psychological support is not only needed in these patients: it is important to locate patients who require some support by employing indicators such as HADS. The details will be elucidated in further studies on the follow-up of patients.

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References
子宮頸部上皮内癌に対するレーザー円錐切除術における
術前不安と抑うつの検討: 良性婦人科疾患との比較

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概要【目的】罹患した病名と手術術式のどちらかがより術前の患者におけるメンタルヘルスに与えるインパクトが大きいのかを明らかにするために、悪性腫瘍に対する手術であるが開腹手術ではなく、侵襲が少ないと予想される子宮頸部上皮内癌に対するレーザー円錐切除術における術前不安と抑うつを良性婦人科疾患に対する諸手術におけるそれらと比較検討した。

【対象と方法】子宮頸部上皮内癌に対するレーザー円錐切除術あるいは婦人科良性疾患（子宮筋腫、子宮脱、卵巣囊腫）に対する手術目的にて入院した日本人女性348名（41.6±12.1歳；上皮内癌55名、良性疾患293名）を対象とし、入院後術前にHADS（Hospital Anxiety and Depression Scale）日本語版に無記名、自記式にて回答が得られた結果を解析した。

【結果】上皮内癌患者では、婦人科良性疾患患者全体と比較してHADS総スコア、不安度、抑うつ度のスコアがいずれも有意に低値であった。卵巣囊腫患者との比較では総スコア、不安度、抑うつ度のスコアはどれも有意に低値であった。子宮筋腫患者との比較では総スコア、抑うつ度のスコアが有意に低値であったが、子宮脱患者との比較では有意差を認めなかった。術式別検討でも、総スコア、不安度についてはレーザー円錐切除術が最も低値、抑うつ度については腹腔鏡下卵巣囊腫摘出術に次いでレーザー円錐切除術が低値であった。

【結論】レーザー円錐切除術は悪性腫瘍に対する手術でありながら、メンタルヘルスに与える影響は良性婦人科疾患に対する手術よりも少なかったことから、手術前の患者にとっては病名よりも手術術式がより強い心理的インパクトを持つ可能性が示唆された。

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