

Psychological Systematic Consideration of Breast Cancer Radiotherapy

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ABSTRACT

In term of the factors affecting psychosocial adjustment of breast cancer patients, their quality of life after surgical operation, radiation, and chemotherapy were systematically meta-analyzed. As a result, their qualities of life of the patients that had radiation therapy was the lowest right after the therapy, and gradually increased after the end of the therapy. However, after six months, their quality of life failed to reach the same level before the therapy. They had depression and side effects the most right after the therapy, and somewhat reduced them after the end of the therapy. In case of surgical operation, the more they were educated, the more they had psychosocial adjustment, and the more they had a medical examination and took out an insurance policy, the more they had psychosocial adjustment. In case of chemotherapy, their cognitive function is influenced so that they have impairments in memory, learning, and thinking stages. Since subjective cognitive impairment has a relationship with depression, it is necessary to monitor depression of chemotherapy patients. Given the results of this systematic meta-analysis, when three types of therapies (surgical operation, radiation therapy, and chemotherapy) are applied to patients with breast cancer, it is necessary to recognize their psychosocial adjustment, depression, anxiety, and quality of life in the nursing and radiation therapy fields and thereby to introduce an intervention program for a holistic approach.

Keywords: Radiation therapy, Breast cancer, Psychological analysis

I. INTRODUCTION

Breast cancer is the most common cancer in the world, and is the 5th most in Korea. As of 2012, its incidence rates increased five times over the 16 years. In 2014, the number of breast cancer patients was 21,484, increasing 20,000 annually.^[1]

As treatment methods of breast cancer patients which are on the constant rise, there are generally three types of therapies: surgical operation, radiation therapy, and chemotherapy.^[2] In particular, for breast cancer treatments, radiation therapy after surgical operation is often used. Applying radiation therapy two-address instruction 4~5 weeks after surgical operation is a widely-accepted theory.

The ultimate purpose of radiation therapy is to give a proper radiation dose to a tumor and enable normal tissues to absorb radiation less.^[3] Radiation is scattered and thereby a radiation dose on a patient's skin increases. As a result, it is possible to cause blisters or skin ulcers, and even a cancer.

For this reason, in radiation therapy of breast cancer, a patient takes off upper clothes completely. In case of breast cancer patients that have radiation therapy, they can have a lot of psychological anxiety because they feel a sense of loss of their breast and they have to take off their top for a treatment.^[4,5]

Therefore, this study tries to systematically meta-analyze the factors affecting psychosocial adjustment of breast cancer patients, and to look into their quality of life after surgical operation, radiation

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therapy, and chemotherapy.

II. MATERIAL AND METHODS

1. Study process

This study systematically analyzes the theses of the breast cancer patients who receive treatment. As keywords of this study, breast cancer, psychological influence, and radiation therapy were used. With the keywords, general psychology of breast cancer patients and their psychological influence according to radiation therapy and chemotherapy are analyzed in this study.

2. Study method

Meta-analysis technique is applied. In terms of medical meaning, meta-analysis technique is a method of summarizing and analyzing the research theses that have been accumulated for several years. [6]In particular, this technique is able to evaluate numerous research theses objectively, comprehensively, and systematically. Systematic research, which is in terms of in the field of humanities, is used to collect and measure data onto controlled conditions, look into relations of the basis of the data analyzed in a precise way, and thereby to find cause and effect.[7]

This study applies the two research techniques which are meta analysis and systematic analysis.

3. Study analysis and statistics

searched for papers on breast cancer radiation therapy and psychology applied to Korean cancer patients for 30 years. The database was searched and data collected from April to July 2018. The research used academic research information service, national rotor library and Korea Med. After searching for 'Breast Cancer' and 'Psychology', the search term was searched for 'cancer patient & psychology' or 'patient & psychology' by keyword.

When searching for 'cancer patient & psychology', a

total of 447 cases were searched by the academic research information service. Fifteen papers including 130 dissertations, 76 domestic journals, 226 books, and research reports were searched.

In the case of the National Rotator Library, a total of 51 data were searched, and 4 books, 20 dissertation articles, 26 academic articles and 1 internet resource were searched. Korea Med searched for "Breast cancer & psychology" and found 81 original articles.

The first selection 579 paper's and A total of 50 journal articles were selected, excluding non-experimental research papers and duplicated papers. In the second selected paper, 21 papers related to radiation therapy, chemotherapy, surgery and patient psychology of breast cancer were selected.

Statistical method was confirmed by chi-square test. A tailored effects model was used. The merging of the effect sizes with homogeneity confirmed the assumption that the results of each study were the same. When heterogeneity was confirmed, it was calculated through random effects model. The statistical significance of the effect size was judged by the overall effect test and 95% confidence interval(CI), based on the significance level of 5%.

4 Analysis on the treatment posture of breast cancer patients

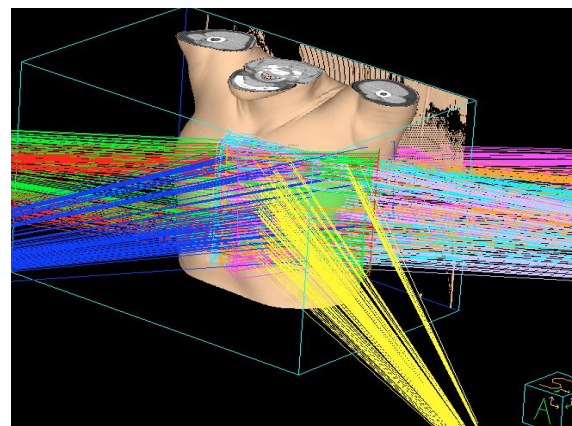


Fig. 1. Breast Cancer Room's Eyes View.^[8]

As shown in Fig. 1, breast cancer patients take off their top fully before receiving radiation therapy. At this time, they have tangential irradiation in terms of radiation and 2 portal irradiation, and raise their both arms to avoid radiation exposure.

III. RESULT

1. General psychology of breast cancer patients

According to the research of Morris, persons who easily get a cancer have "Type C Personality"^[9-11] in terms of the classification of personality traits.

People with type C personalities control their anger, get along with others, adapt themselves to others, and have no strong self-assertiveness and high perseverance. As the protective mechanism for stress, they have a trait of self-defense. In addition, they often have emotional suppression, depression, and lethargy. These traits are the same as the general characteristics of breast cancer patients.

A recent reports show the studies on the general characteristics of breast cancer patients by Bryla C. M.^[12] and Ha Eun-hye^[13], they lack their ability to express their emotions and control their anger and their ability to control hostility and rage under their stress, and tend to suppress their emotions. in addition, they have poor stress-relief ways like self-violence. This pattern is similar to exasperation.

2. Research on the influence of radiation therapy on patients' quality of life

A survey says the research by Kim Mae-ja et al.^[14-16], the factors that influence people's quality of life are classified into physical factors, disease-related factors, psychosocial factors, and spiritual factors. Physical factors include fatigue, weakness, loss of appetite, and sleep disorder. Disease-related factors include pain, a degree of functional damage, a type of tumor, a disease stage, and disease duration.

Psychosocial factors include sex, education,

incomes, occupation, a spouse, a sense of wellness, self-esteem, a degree of support of acquaintances, stress, depression, and anxiety. A spiritual factor is religion.

For the judgment on radiation therapy, a direct questionnaire survey was conducted with medical records. The questionnaire consisted 12 questions on the five-point scale. For the judgment of depression, self-assessment depression scales (SDS) with 20 questions and the four-point scale was applied.

As an experimental result, the score of their quality of life fell from 6.66 points to 6.4 points right after the therapy as shown in Fig. 2, gradually increased after the end of radiation therapy, and recovered to 6.59 points six months after the therapy. Nevertheless, their qualities of life was not better than that before the therapy. The score of their side effects, as shown in Fig. 3, went up to the highest or 1.78 from 0.51 right after the therapy. That seems to be because of the accumulated radiation dose of patients in radiation therapy. Three months after the end of the therapy, the score of their side effects decreased 50% more than that at the end of the therapy, and was 0.92. The score of their depression, as shown in Fig. 4, increased from 2.12, points before the therapy to 2.21, points right after the therapy. Three months after the end of the therapy, the score somewhat fell to 2.17, but was not lower than that before the therapy.

Given the results, their side effects and depression had the same pattern so that they had a correlation. The researchers argued that 75% of the patients had nausea and fatigue simply because of radiation therapy. In addition, six months after radiation therapy, the factor that had a correlation with their quality of life was age.

Their side effects were the lowest before the therapy. Typical side effects were nausea, vomiting, stomach ache, diarrhea, fatigue, weakness, skin discoloration, and hair loss.

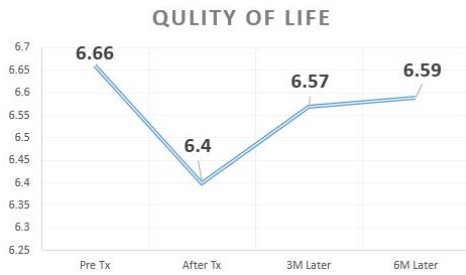


Fig. 2. Quality of Life.

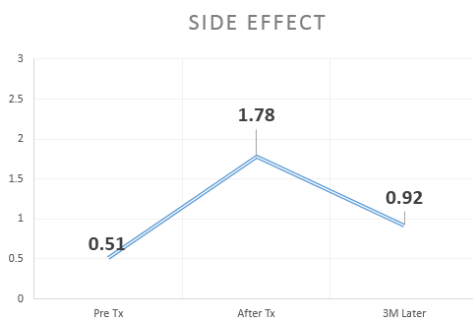


Fig. 3. Side Effect.

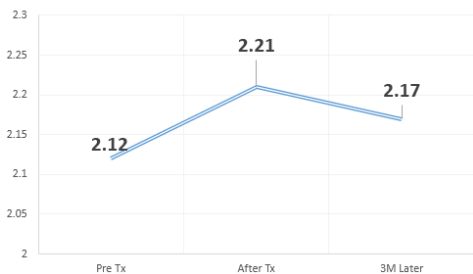


Fig. 4. Depression.

3. The influence of surgical operation on the quality of life of breast cancer patients

In the research on the factors affecting the psychosocial adjustment of patients with surgical removal of benign breast tumor which was conducted by Kim Hyeon-sook et al., correlations between physical discomfort, body image, family support, and psychological adjustment were analyzed in order to provide a fundamental material for intervention programs of patients. High points meant high quality

of life. According to the research, the score of psychosocial adjustment after surgical operation was higher when their education level was higher, when the number of surgical removals was two, and when the number of regular medical examinations was at least once every year.

In addition, the score of psychosocial adjustment was high when they purchased a cancer insurance policy, had a regular menstruation cycle, received family support, and experienced mild physical discomfort.

Of physical discomfort factors, the factor that influenced their psychosocial adjustment the most was postoperative pain, followed by postoperative contusion, breast lump, frozen shoulder, postoperative edema, postoperative retraction, general weakness, postoperative skin heating, and fever sign in order. Surgical incision site inflammation was the least influential.

4. The influence of chemotherapy on the quality of life of breast cancer patients

Oh Bok-ja et al.^[17] researched the influence of chemotherapy on breast cancer patients' cognitive function and depression.

In the research, a typical symptom of chemotherapy patients was the impairment called chemo brain or chemo fog which means their functional impairment and damage to their memory, working memory (immediate memory), concentration and information processing speed. Because of this symptom, patients felt that their brain was foggy.

In the research, cognitive impairment was classified into subjective cognitive impairment and objective cognitive impairment. They had more subjective cognitive impairment and objective cognitive impairment when they had a lower educational level and menopause.

Particularly, although subjective cognitive impairment had a clear causal relation with depression,

objective cognitive impairment had no relation with depression.

In the way of chemotherapy, 52% of patients replied that they sometimes had subjective cognitive impairment and had cognitive impairment. After the end of the therapy, 24% had cognitive impairment. It indicates that chemotherapy impedes the neural transmission of brain and thereby causes subjective cognitive impairment.

IV. DISCUSSION

Based on three types of therapies of breast cancer patients (surgical operation, chemotherapy, and radiation therapy), meta-analysis were conducted on the patients' psychology.

In case of surgical operation, physical discomfort was found as their psychosocial adjustment. Among the discomfort factors, postoperative pain scored the highest points. Accordingly, it is necessary to carry out a surgical operation with minimal incision technique in consideration of a patient's pain.

That psychosocial adjustment scored high points when the patients had a regular medical examination and purchased a cancer insurance policy means that they are highly interested in their health, and that self-directed care can help to create stable psychological status.

In case of chemotherapy, menopause causes the reduction in estrogen that triggers neurodegeneration. It means neurodegeneration of the hippocampus that plays a pivotal role of memory and cognition. Chemotherapy leads to reduced subjective cognitive function.^[18]

In terms of cognitive impairment related to chemotherapy, patients can have such severe impairments as lowered concentration and attention in mundane situations. In subjective cognitive function evaluation, emotional status other than experiences in a certain period is also taken into consideration.

Chemotherapy lowers cognitive function and triggers depression. Such symptoms continue to occur six months after the end of chemotherapy. In particular, right after the end of chemotherapy, divided attention disorder rapidly occurs (70%).

In case of radiation therapy, radiation therapy only causes patient's nausea and fatigue which seem to be radiation sickness among acute radiation injuries. As a side effect of radiation, it is possible to accompany depression. Therefore, it is necessary to make a clear plan of radiation therapy in order to minimize side effects.^[19,20]

Patients' quality of life is better somewhat six months after the end of radiation therapy. The younger the patients are, the better their quality of life is^[21]. Therefore, it is necessary to come up with a plan for the psychological stability of older patients in hospital.

V. CONCLUSION

This study revealed that 'side effects' of radiation therapy, 'physical discomfort' of surgical operation, and 'subjective cognitive impairment' of chemotherapy had a direct relationship with depression. To reduce patients' discomfort, it is necessary to make diversified approaches.

All patients who have radiation therapy, chemotherapy and surgical operation feel mild or severe depression. Therefore, it is necessary to manage patients' depression in hospital.

Generally, radiation therapy is applied together with chemotherapy. Therefore, it is necessary to recognize cognitive impairment. In particular, it is necessary to provide an intervention program for breast cancer patients in the nursing field, in the radiation field, and especially in the radiation therapy field.

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유방암 방사선 치료 환자의 심리의 체계적 분석

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요 약

유방암 환자의 사회 심리적 적응 영향 요인을 수술, 방사선, 항암치료 후의 삶의 질 변화를 체계적 메타 분석한 결과 방사선 치료시 삶의 질은 치료직후에 가장 낮았고 종료 후에는 점점 상승하고 있지만 종료 6개월 후에도 치료 전의 삶의 질 만큼 회복 되지 않았다. 우울증과 부작용은 치료 직 후 가장 높았으며 치료 종료 후에는 다소 감소하였다. 수술요법의 경우 학력이 높을수록 심리 사회적 적응이 높았으며 검진과 보험가입이 있을 경우 심리 사회적 적응이 좋았다. 항암 화학요법의 경우 인지기능에 영향을 받아 기억력, 학습, 사고 등의 단계에서 장애를 받고 있으며 주관적 인지장애와 우울은 연관성이 있어서, 항암요법환자의 우울증의 추적관찰이 필요하다. 본 체계적 메타연구 결과 유방암환자의 3가지 치료법(수술요법, 방사선요법, 항암요법)을 시행 할 때 간호분야와 방사선 치료분야는 이러한 환자의 사회심리적 적응, 우울, 불안, 삶의 질의 경향을 인지하여 전인적 접근을 할 수 있도록 중재프로그램을 도입해야 할 것으로 생각된다.

중심단어: 방사선치료, 유방암, 심리분석

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