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Case Report

세포교정영양요법(OCNT)을 이용한 암피로증후군 개선 사례

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A Case Report of Improved Cancer-Related Fatigue (CRF) Using Ortho-Cellular Nutrition Therapy (OCNT)

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ABSTRACT
Objective: Cancer treatment involves multiple modalities, such as surgery, cytotoxic chemotherapy, targeted therapy, and radiotherapy, and treatment outcomes have been progressively improving in recent years through multidisciplinary strategies. However, concerns about a range of adverse effects persist throughout the course of treatment, and cancer-related fatigue (CRF) is among the most common and most challenging to manage. This symptom is accompanied by fatigue that is difficult to recover from even with adequate rest and can affect patients' overall condition as well as their subsequent responses to therapy. Nevertheless, because there is no standardized approach to treatment or management, the need for effective management strategies has been increasingly emphasized.
Case Report: This case report describes a Korean woman in her 60s who underwent surgery and anticancer therapy for HER2-positive breast cancer and subsequently reported symptoms consistent with CRF. After anticancer treatment, the patient experienced typical treatment-related adverse effects, including fatigue, lethargy, anxiety, insomnia, weight loss, and lymphedema, which were also consistent with CRF. Accordingly, Ortho-Cellular Nutrition Therapy (OCNT), which involved prescribing nutrients such as anthocyanins, carotenoids, omega-3 fatty acids, beta-glucan, selenium, and vitamin D, was applied as an adjunctive therapy. As a result, overall fatigue and CRF symptoms that developed after anticancer treatment improved to a level that did not substantially interfere with daily activities.
Conclusion: This case report demonstrates the potential for OCNT to be implemented as a practical adjunctive strategy for managing CRF. In addition, the findings are consistent with the direction of integrative cancer care proposed in current oncology guidelines, suggesting that nutrient-based interventions may contribute to the overall improvement in CRF in the future.

Keywords Ortho-Cellular Nutrition Therapy (OCNT), Cancer-related fatigue (CRF), Chemotherapy, Integrative cancer care, Breast cancer

Introduction

In recent years, cancer treatment outcomes have progressively improved with multiple modalities, including surgery, cytotoxic chemotherapy, targeted therapy, and radiotherapy, as well as combined regimens and multidisciplinary strategies that integrate these approaches. Moreover, beyond conventional drugs and regimens, novel therapeutic approaches are being developed at the molecular level, including interventions that modulate cellular signaling, metabolism, and immune function, as well as peptide- and antibody-based therapies, thereby expanding the available therapeutic options.[1]

However, despite the development of these therapies, adverse effects associated with anticancer treatment continue to occur and have a substantial impact on patients' quality of life and treatment continuity. These adverse effects manifest as diverse symptoms across multiple organ systems, including the gastrointestinal, dermatologic, immune, and cardiovascular systems. In particular, cancer-related fatigue (CRF) is among the most common treatment-related adverse effects and remains challenging to manage clinically.[2]

CRF is characterized by persistent fatigue that is not adequately alleviated by rest or sleep and can be described as a multidimensional symptom accompanied by declines in physical, psychological, and cognitive functioning. It frequently occurs during postoperative cytotoxic chemotherapy,

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targeted therapy, and radiotherapy or during combined treatment courses, and fatigue often accumulates or becomes prolonged depending on subsequent treatment.[3]

The pathophysiology of CRF is understood to involve multiple contributing factors rather than a single cause. These include inflammatory cytokines, oxidative stress, mitochondrial dysfunction, impaired energy metabolism, immune dysregulation, imbalanced nutritional status, and hormonal alterations. In particular, certain cancer treatments, such as cytotoxic chemotherapy and targeted therapy, can increase systemic inflammatory responses and oxidative stress and may adversely affect cellular metabolism and immune homeostasis, thereby exacerbating CRF-related symptoms.[4]

These symptoms can negatively affect multiple domains, including physical activity, psychological functioning, and social functioning and relationships, and may further reduce adherence to subsequent treatment. In addition, they can impose a burden not only on patients but also on caregivers, family members, and other individuals involved in care. However, CRF is often regarded as an unavoidable consequence of cancer treatment, and proactive assessment and intervention are often inadequate, which has hindered the establishment of clear standards of care. Therefore, there is increasing emphasis on recognizing CRF not merely as a symptom but as a manifestation of systemic physiological dysregulation, actively identifying contributing factors, and implementing integrative management strategies that address the broader pathophysiology.[5]

This case report describes the use of Ortho-Cellular Nutrition Therapy (OCNT) in a Korean woman diagnosed with stage IIB breast cancer who experienced CRF after undergoing surgery and anticancer treatment. Clinical changes and the subsequent clinical course were prospectively monitored and documented, with outcomes assessed using a fatigue rating scale. The report aims to present the potential of OCNT as an intervention for CRF management and its potential implications for subsequent treatment. With the patient's consent, the clinical course is presented, demonstrating substantial symptom improvement.

Case Study

1. Subject

A single case of CRF was included.

1) Name: Choi OO (68 years old, Female)
2) Diagnosis: Stage IIB HER2-positive breast cancer
3) Onset: May 2024
4) Treatment period: September 2024 to July 2025
5) Chief complaints: Symptoms consistent with CRF, including fatigue, lethargy, anxiety, insomnia, dizziness, weight loss, alopecia, dry eyes, cold intolerance, and edema
6) Past medical history: None
7) Social history: None
8) Family history: None
9) Present illness and concomitant medications: Received cytotoxic chemotherapy and HER2-targeted therapy

Detailed diagnostic findings and treatment details are presented in Table 1.

2. Methods

The OCNT prescribed to the patient is detailed in Table 2.

Results

In this case, OCNT was implemented to improve CRF symptoms that developed during breast cancer treatment. Following initiation of OCNT, the patient reported gradual improvement in fatigue, lethargy, anxiety, and insomnia that she attributed to anticancer therapy, and the degree of weight loss also gradually decreased. During continued OCNT,

Table 1. Detailed baseline diagnostic findings and treatment course of the patient.

Pathological findings and diagnosis	Stage IIB left breast cancer
Immunohistochemistry (IHC)	HER2-positive
Lymph node metastasis	4-mm lymph node metastasis identified
Administered treatments	4th-line cytotoxic chemotherapy with TC regimen (cyclophosphamide + paclitaxel) combined with HER2-targeted therapy (trastuzumab)
Planned treatment	1. Radiotherapy combined with HER2-targeted therapy (trastuzumab) 2. HER2-targeted therapy (trastuzumab) monotherapy (14 cycles planned)

Table 2. OCNT prescribed for the patient.

Prescription \ Course	1	2	3	4	5	6	7
Cyaplex F granules	202	202	202	202	202	202	101
Enzaplex F granules	101	101	101	101	101	101	101
Betaplex granules	101	101	101	101	101	101	101
Caroplex F granules	101	101	101	101	101	101	-
Eufaplex Alpha (stick)	202	202	202	202	202	202	-
Bioplex F granules	101	101	101	101	101	101	-
Selenplex capsules	202	202	202	202	202	202	-
Aqua SAC	10ml/day	10ml/day	10ml/day	10ml/day	10ml/day	10ml/day	-
Diverol capsules	020	020	020	020	020	020	-
Thyroplex F granules	-	100	101	101	101	101	101
Collaplex granules	-	-	101	101	101	101	-
Epibiome F granules	-	-	-	-	-	-	101
Sinsuwon	101	-	-	-	-	-	-

* 100: Take once daily, 1 sachet/capsule per dose, in the morning, 101: Take twice daily, 1 sachet/capsule per dose, in the morning and evening, 020: Take once daily, 2 sachets/capsules per dose, at afternoon, 202: Take twice daily, 2 sachets/capsules per dose, in the morning and evening

additional symptoms beyond those noted above, including dizziness, cold intolerance, edema, and alopecia, decreased over time. After approximately 4 months, most symptoms improved to a level that did not substantially interfere with daily activities. The extent of symptom-related discomfort reported during OCNT is detailed in Table 3.

Discussion

his case report describes a Korean woman in her 60s diagnosed with stage II HER2-positive breast cancer. The patient underwent tumor resection via mastectomy and subsequently received cytotoxic chemotherapy using a TC regimen in combination with HER2-targeted therapy. During treatment, she reported typical treatment-related adverse effects, including fatigue, lethargy, anxiety, insomnia, weight loss, lymphedema, and dry eyes. These findings were consistent with clinical features of CRF related to anticancer therapy reported in previous studies.[6] In addition, the thyroid-stimulating hormone (TSH) level was 8.0 IU/mL, above the normal range, suggesting possible subclinical hypothyroidism, which may have contributed to symptoms such as fatigue, cold intolerance, and weight change.

Table 3. Severity of symptoms reported by the patient during OCNT. Higher scores from 0 to 5 indicate greater discomfort experienced by the patient.

Symptoms \ Course	1	2	3	4	5~7
Fatigue, lethargy	5	3	2	1	1
Anxiety, insomnia	5	3	3	2	1
Dizziness	4	3	2	2	0
Weight loss	-5kg	-5kg	-3kg	-2kg	-1kg
Alopecia	4	3	2	1	0
Cold intolerance	5	5	3	2	1
Lymphedema	3	2	1	0	0
Dry eyes	-	-	4	3	1

0: No symptoms and no impact on daily activities; 1: Mild symptoms with minimal impact on daily activities; 2: Noticeable symptoms requiring minor adjustments in daily activities; 3: Symptoms significantly affect daily activities, making some tasks difficult; 4: Major difficulty performing tasks during daily activities; 5: Symptoms severely interfere with daily activities, causing substantial distress

CRF is considered a multifactorial condition driven by the combined effects of the tumor itself, anticancer therapy, inflammatory responses, endocrine alterations, and nutritional imbalance, and no standardized treatment has been established to date. Accordingly, OCNT was used in this case as an adjunctive approach to support CRF management and symptom improvement. The OCNT regimen was prescribed with an emphasis on supporting antioxidant function and regulation of inflammation, modulating immune responses, regulating energy metabolism, and supporting nutrient metabolism.

First, Cyaplex X, Caroplex, and Eufaplex Alpha were prescribed to enhance the patient's antioxidant capacity and regulate inflammatory responses. The primary active components of Cyaplex X are anthocyanins, which can support the activity of antioxidant enzymes such as catalase (CAT) and glutathione peroxidase (GPx) and may also contribute to inflammatory modulation by suppressing pro-inflammatory cytokines, including TNF-α, IL-6, and IL-1β.[7] Caroplex is rich in beta-carotene, a carotenoid commonly found in fruits and vegetables. Beta-carotene has been reported to modulate inflammatory pathways such as NF-κB, NLRP3, and MAPK and help reduce the accumulation of reactive oxygen species.[8] Caroplex is rich in beta-carotene, a carotenoid commonly found in fruits and vegetables. Beta-carotene has been reported to modulate inflammatory pathways such as NF-κB, NLRP3, and MAPK and help reduce the accumulation of reactive oxygen species.

Next, beta-glucan, selenium, and vitamin D were selected to support immune function. Beta-glucan is a component found in the cell walls of mushrooms, oats, and yeast. It is known to stimulate immune cells, thereby enhancing immune activation, and has been reported to support adaptive immune function.[9] Selenium is a trace mineral that, upon intake, is converted into selenoproteins in the body and exerts biological activity. It has been reported to affect immune function by promoting the activation of immune cells such as T cells and natural killer (NK) cells.[10] Vitamin D is widely recognized for promoting calcium absorption and regulating bone metabolism, but it has also been shown to influence immune homeostasis by modulating immune cell expression.[11] These components were intended to be provided through Betaplex, Selenplex, and Diverol, respectively.

Regulation of energy metabolism is essential for the effective modulation of the functions described above. Accordingly, Aqua SAC and Thyroplex F were prescribed to support this process. Aqua SAC contains calcium ions as its main component, which are required for mitochondrial energy metabolism. Mitochondria generate adenosine triphosphate (ATP), a primary cellular energy source, through oxidative phosphorylation, and calcium ions are essential for this process. Adequate provision of calcium ions may support these processes and thereby promote overall energy metabolism.[12]

Thyroplex is rich in iodine, which is essential for the synthesis of thyroid hormones that regulate energy metabolism and neural function. If iodine levels are inadequate, thyroid hormone synthesis may be impaired, potentially resulting in thyroid dysfunction.[13] In this case, the patient's TSH level was above the normal range, raising suspicion of hypothyroidism, and insufficient iodine intake was considered a contributing factor. Accordingly, iodine was provided through this preparation.

Finally, OCNT was prescribed to provide adequate nutrients to support overall physiological functioning. For this purpose, Enzaplex F, Bioplex F, and Collaplex were prescribed. Enzaplex contains multiple digestive enzymes, including amylase, protease, and lipase. These enzymes facilitate the digestion of carbohydrates, proteins, and fats, thereby supporting intestinal nutrient absorption. Supplementation with such enzymes in individuals with reduced physical function has been reported to improve overall nutrient absorption.[14]

Bioplex consists primarily of plant-derived dietary fiber and fructo-oligosaccharides, which have been reported to promote the absorption of certain minerals, including calcium and magnesium, during digestion.[15,16] Collaplex is rich in collagen. Collagen is a structural protein that constitutes connective tissues throughout the body, and this product was prescribed to provide collagen-derived peptides via supplementation. In addition, once digested and absorbed, collagen supplementation may contribute to the maintenance of connective tissues such as muscle and skin.[17]

With this OCNT regimen, the patient showed improvement in CRF symptoms associated with anticancer treatment, which is noteworthy because it supported the continuation of subsequent anticancer therapy. Moreover, OCNT was not intended to replace standard anticancer treatment but was implemented concurrently as a complementary approach to support standard treatment, which is consistent with the direction of integrative cancer care emphasized in current oncology guidelines.[18] However, this report is limited by its single-patient design, and a causal relationship cannot be inferred or generalized. Further systematic studies and analyses involving larger populations are warranted. Nevertheless, this case suggests a potential role for appropriately prescribed OCNT as an adjunctive intervention for managing CRF during anticancer treatment. Accordingly, this case is reported with the patient's consent.

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