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Case Report

세포교정영양요법(OCNT)을 이용한 골관절염 개선 사례

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A Case Report on the Improvement of Osteoarthritis Using Ortho-Cellular Nutrition Therapy (OCNT)

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ABSTRACT

Objective: Osteoarthritis is one of the most common disorders affecting the entire joint. It occurs due to the degeneration of cartilage, which reduces joint friction and distributes weight. However, recent studies have shown that various factors, such as inflammation and metabolic changes, also contribute to the onset of osteoarthritis in a complex manner. Osteoarthritis presents symptoms such as pain and swelling, which may vary slightly depending on the affected area. Therefore, it is essential to assess the location and severity of the condition to decide on the appropriate treatment, which can include lifestyle modifications, dietary and pharmacological interventions, exercise, and surgical procedures.

Case Report: This case study involved a Korean male in his 60s who was diagnosed with osteoarthritis in the knee, ankle, and shoulder joints, which significantly interfered with his daily and occupational activities. He had been receiving treatment, but it was limited to symptomatic therapies and non-conservative procedures such as repeated synovial fluid drainage from the knee. The patient had even been recommended for surgery by his attending hospital. Accordingly, Ortho-Cellular Nutrition Therapy (OCNT) consisting of anthocyanins, omega-3 fatty acids, methylsulfonylmethane (MSM), collagen, and calcium was administered. After approximately six months of OCNT, the patient showed significant improvement in overall pain levels, and his symptoms improved to the extent that he was able to resume regular daily and occupational activities.

Conclusion: OCNT led to a notable reduction in osteoarthritis-related pain and swelling experienced by the patient. Although the findings are limited to a single case, the OCNT regimen—prescribed with consideration of the patient's specific condition—appears to have made a meaningful contribution to symptom relief and the patient's return to normal daily life.

Keywords Ortho-Cellular Nutrition Therapy (OCNT), osteoarthritis, cartilage, inflammation

Introduction

Osteoarthritis is the most common joint disorder. It primarily affects the cartilage, which covers the articular surfaces of bones and plays a key role in reducing friction during joint movement and distributing mechanical loads. Osteoarthritis develops when chronic overload and mechanical abnormalities in the joint lead to cartilage degradation and exposure of the subchondral bone. While osteoarthritis was previously regarded as a condition caused solely by mechanical wear and tear of the cartilage, recent studies have revealed that inflammation, immune responses, and metabolic changes also contribute to its pathogenesis in a complex manner.[1]

The causes of osteoarthritis are challenging to define as a single factor, and it is known to result from a combination of various contributing elements. These can be broadly categorized into individual-level factors and joint-level factors. Individual-level factors include age, sex, obesity, underlying conditions such as sarcopenia or diabetes, dietary habits, and genetic predisposition. Joint-level factors include damage or injury to the joint, such as anterior cruciate ligament (ACL) tears; mechanical overload caused by repetitive movements or heavy lifting; and cartilage damage resulting from joint inflammation.[2]

Osteoarthritis can affect all joint areas of the body, including the knees, hips, shoulders, ankles, finger joints, and spine. Common symptoms include pain, stiffness, reduced

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range of motion, swelling, and crepitus, although these may vary slightly depending on the affected area and the stage of progression. The knee is the most common site of osteoarthritis, typically presenting with pain and swelling, and may also show synovial effusion, often described as "fluid accumulation" in the knee. When osteoarthritis affects the spine, it may cause lower back pain and radiating pain, sometimes accompanied by tingling sensations due to nerve involvement. In the case of hip joint osteoarthritis, restrictions in the range of motion can lead to difficulty walking. When it occurs in the finger joints, nodules may develop, causing noticeable thickening of the finger joints.[3]

As osteoarthritis presents with slightly different characteristics depending on the affected area, diagnosis is typically made by taking the patient's medical history and performing a physical examination, accompanied by radiography as an auxiliary. Through these assessments, the location and severity of osteoarthritis can be accurately determined, enabling the application of appropriate treatments. Treatment options include non-pharmacological approaches, such as exercise therapy, dietary management, lifestyle modification, physical therapy, and the use of assistive devices, as well as pharmacological treatments, including nonsteroidal anti-inflammatory drugs (NSAIDs), corticosteroid injections, and COX-2 inhibitors. These methods aim to slow disease progression and reduce pain. If symptoms do not improve with these approaches, surgical options such as arthroscopy, arthrodesis, or joint replacement may be considered. Therefore, selecting an appropriate treatment based on the patient's condition and preferences is essential for improving clinical outcomes.[4]

This case study involves a patient with osteoarthritis affecting the knee, ankle, and shoulder joints, which caused difficulties in daily activities such as walking. Therefore, Ortho-Cellular Nutrition Therapy (OCNT) was applied to this patient. As a result, a significant improvement in osteoarthritis symptoms was observed. Accordingly, this case is reported with the patient's consent.

Case Study

1. Subject

This study involved one patient diagnosed with osteoarthritis.

1) Name: Kwon OO (62 years old, M)
2) Diagnosis: Osteoarthritis
3) Date of onset: Estimated approximately 5–6 years ago (2019–2020)
4) Treatment period: June 2021 – February 2022
5) Chief complaints: Bilateral knee joint swelling and pain, bilateral ankle joint pain, shoulder joint pain, difficulty walking, peripheral circulatory disorder
6) Medical history: Type 2 diabetes, myocardial infarction, abdominal obesity, benign prostatic hyperplasia, diabetic retinopathy
7) Social history: Occupational stress related to his job as a carpenter
8) Family history: None
9) Current illness and medications: None

2. Method

The OCNT prescribed to the patient is detailed in Table 1.

Table 1. OCNT Applied to the Patient

Type \ Month	1 ~ 2	3~ 6
Cyaplex X Granules	101	101
Eufaplex Alpha Stick	101	101
Calmaplex Granules	101	101
Collaplex Granules	101	101
Sulfoplex PK Tablets	404	404
Aqua SAC	-	5 ml each in the morning and afternoon
Sulfoplex Cream	Applied to the affected area several times a day	

* Instructed to be mixed with 500 ml of bottled water and taken in divided doses.
** 101: One sachet or tablet twice daily, once in the morning and once in the evening. 404: Four tablets twice daily, once in the morning and once in the evening.

Results

The patient in this case study was diagnosed with osteoarthritis in the knee, shoulder, and ankle joints, experiencing difficulties in daily life, and underwent Ortho-Cellular Nutrition Therapy (OCNT). Changes in the patient's condition and the severity of symptoms as reported by the patient during OCNT are presented in Tables 2 and 3.

Table 2. Changes in the Patient's Condition Throughout OCNT

Before OCNT	• Difficulty walking to the extent of requiring assistance from a caregiver • Severe joint swelling and pain
1 month after	• No noticeable improvement in pain or walking ability
2 months after	• Slight improvement in shoulder pain • Worsened knee pain and swelling at night
3 months after	• Overall reduction in joint pain and swelling
4 months after	• General symptom improvement, except for mild pain in the shoulder and ankle joints
6 months after	• The patient was able to perform daily activities and carry out his primary occupation as a carpenter at a near-normal level.

Table 3. Severity of Symptoms Experienced by the Patient Throughout OCNT. The degree of discomfort reported by the patient increases from 0 to 5.

Symptom \ Month	1	2	3	4~6
Bilateral knee joint swelling	5	5	2	1
Knee pain	0	4	1	0
Difficulty walking	5	4	2	0
Ankle joint pain	5	3	2	1
Shoulder joint pain	5	3	2	1

0: No symptoms and no impact on daily life; 1: Mild symptoms with little to no impact on daily life; 2: More noticeable symptoms requiring some adaptation in daily life; 3: Symptoms significantly affect daily life, causing difficulty in performing some activities; 4: Great difficulty in performing activities during daily life; 5: Discomfort in daily life accompanied by severe stress

Discussion

The patient in this case study was a Korean male in his 60s who had been diagnosed with osteoarthritis in the knee, ankle, and shoulder joints several years earlier. According to his medical history, he had underlying conditions including type 2 diabetes and myocardial infarction, and experienced excessive physical stress due to his occupation as a carpenter. Despite receiving symptomatic treatment for several years, his knee swelling worsened, and synovial effusion occurred frequently, requiring more than 20 non-conservative treatments to remove the effusion. However, there was little improvement in symptoms, and frequent recurrences led him to visit a specialized orthopedic hospital where he was recommended to undergo total joint replacement surgery. Nevertheless, he decided to postpone the surgery and visited a pharmacy instead.

Based on the patient interview and assessment described above, it was considered that the patient's diabetes and occupational environment had an impact on his osteoarthritis. Hyperglycemia increases oxidative stress in cartilage cells, induces the production of inflammatory cytokines, and reduces anti-inflammatory functions.[5] Additionally, oxidative stress caused by excessive movement increases the expression of inflammatory cytokines in cartilage and promotes the aging and apoptosis of chondrocytes.[6] Therefore, OCNT was prescribed to reduce the patient's oxidative stress, regulate inflammatory responses, and help preserve and manage joint and cartilage function.

Cyaplex X was prescribed to regulate the patient's oxidative stress. This OCNT contains a high concentration of anthocyanins, which are known to help reduce reactive oxygen species and oxidative stress. Anthocyanins are a type of purple-colored flavonoid found in various berries such as blueberries, bilberries, aronia, and blackcurrants, as well as certain vegetables like red cabbage and eggplant. These compounds can stabilize free radicals, including reactive oxygen species, through mechanisms such as hydrogen atom transfer (HAT) and single-electron transfer (SET), thereby aiding antioxidant activity. Additionally, animal studies have shown that administering anthocyanins to rats increases the expression of antioxidant enzymes, such as catalase (CAT) and superoxide dismutase (SOD), while decreasing the expression of malondialdehyde (MDA), a marker of oxidative stress.[7] Therefore, this ingredient appears to have contributed to enhancing the patient's antioxidant capacity.

Omega-3 fatty acids have been identified in numerous studies as nutrients that help regulate inflammation and enhance immune function. Recently, specialized pro-resolving mediators (SPMs)—lipid mediators derived from omega-3 fatty acids—have been discovered through LC-MS/MS analysis. These include EPA and DHA, which are known to regulate inflammation by inhibiting the expression of COX-2 and lipoxygenases (LOX), enzymes involved in inflammatory processes. Additionally, omega-3 fatty acids are known to modulate the overall inflammatory response by suppressing neutrophil tissue infiltration and the induction of Th1 and Th17 cells, which promote excessive inflammation, while promoting regulatory T (Treg) cells that mitigate inflammation.[8] Accordingly, Eufaplex was prescribed to supply the patient with high-quality omega-3.

In addition to supporting the patient's antioxidant capacity and regulating inflammatory responses, nutrients that promote joint health and function were also prescribed. Methylsulfonylmethane (MSM), an organic sulfur compound, is known to help alleviate joint pain through its anti-inflammatory mechanisms. Studies have shown that MSM modulates the expression of inflammatory mediators, including IL-1β, IL-6, and TNF-α, as well as the transcription factor NF-κB. It also reduces the expression of COX-2 and iNOS, which are associated with oxidative stress, thereby contributing to its antioxidant properties. Furthermore, MSM has been found to activate the Jak2/STAT5b signaling pathway, which is involved in metabolic regulation, promotes osteoblast differentiation, and upregulates the expression of RUNX2. This key gene drives the expression of gene clusters involved in bone formation.[9]

Collagen is also a key nutrient that plays a vital role in supporting joint function. It is a type of extracellular matrix protein that makes up cartilage, and an adequate supply is essential for maintaining cartilage function. Proper intake of collagen can promote the synthesis of extracellular matrix in cartilage and support cartilage regeneration.[10] In one clinical study, patients with knee or hip osteoarthritis were administered hydrolyzed collagen for up to 8 weeks, resulting in a significant reduction in both the WOMAC index score—a commonly used indicator for osteoarthritis—and the VAS score, which assesses pain severity.[11] These two ingredients were provided through Sulfoplex PK Tablets, Sulfoplex Cream for MSM, and Collaplex for collagen.

Calcium is one of the primary minerals that constitute bone and plays a crucial role in various cellular signaling processes. The skeleton also serves as the primary calcium reservoir and plays a central role in regulating calcium homeostasis. Therefore, an adequate intake of calcium is essential for maintaining bone health. A study investigating the relationship between calcium supplementation and disease incidence found that calcium intake significantly reduced the risk of developing osteoarthritis, likely due to increased bone mineral density associated with supplementation.[12] Accordingly, Calmaplex and Aqua SAC were prescribed to provide the patient with high-quality calcium.

Through the administration of the above OCNT, the patient ultimately showed significant improvement in symptoms, to the extent that he was able to return to his daily life and work, which had previously been affected by osteoarthritis. Notably, although the patient had been advised to undergo total joint replacement surgery due to the severity of his symptoms, the OCNT led to meaningful improvements in pain, swelling, and other related symptoms. However, as this case study involves a single patient, there are limitations in generalizing the findings to all individuals with osteoarthritis. Nonetheless, it is reported here with the patient's consent, as the OCNT prescribed according to the patient's specific symptoms and condition appeared to have had a significant effect on the improvement of osteoarthritis.

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