OCNT Ortho-Cellular Nutrition Therapy

Case Report

세포교정영양요법(OCNT)을 이용한 난청 개선 사례

조종빈

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A Case of Improvement in Hearing Loss Using Ortho-Cellular Nutrition Therapy (OCNT)

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ABSTRACT

Objective: Hearing loss refers to a condition in which overall auditory function is reduced due to widespread damage to auditory sensory cells. It not only places a considerable burden on affected individuals, but its prevalence also increases sharply with age. Recent studies show that auditory cells are at greater risk of damage from persistent oxidative stress than other cell types, and that the resulting cellular damage, impaired blood flow, and mitochondrial dysfunction are major pathophysiological mechanisms. Hearing loss is recognized as an important health problem because it is closely associated not only with cognitive and neurological problems but also with psychological and social problems, and the importance of mechanism-based adjunctive therapies to mitigate these pathological processes has been emphasized.

Case Report: This case involved a Korean woman in her 80s who complained of difficulties in daily conversation, decreased concentration, and depressive symptoms due to hearing loss. Ortho-Cellular Nutrition Therapy (OCNT) including anthocyanins, zinc, manganese, G*inkgo biloba* extract, alpha-linolenic acid, and vitamin D was administered. As a result, her auditory function gradually improved, as evidenced by asking others to repeat themselves less often and improved communication in noisy environments, while associated symptoms such as decreased concentration, depressive symptoms, and headaches also improved.

Conclusion: Although this case involved a single patient and therefore has limited generalizability to other patients with hearing loss, it is considered clinically meaningful in suggesting that appropriate OCNT may significantly improve hearing loss-related symptoms, difficulties in daily activities, and quality of life.

Keywords Ortho-Cellular Nutrition Therapy (OCNT), Hearing loss, Auditory cells, Oxidative stress, Blood flow

Introduction

Hearing loss refers to an overall decline in auditory function responsible for detecting, transmitting, and interpreting external sounds. Hearing loss itself imposes a substantial disease burden, and its prevalence has been shown to approximately double with each 10-year increase in age. In addition, the prevalence increases sharply among older adults, with hearing loss occurring in approximately 50% of individuals aged 60–69 years, while more than 80% of those aged 85 years or older have been reported to experience hearing impairment. Age-related hearing loss, which predominantly occurs in older adults, is regarded not simply as a consequence of aging but as a progressive sensorineural hearing loss resulting from the combined effects of inner ear hair cell damage, auditory nerve degeneration, impaired cochlear microvascular circulation, and increased oxidative stress.[1]

Auditory cells in the cochlea have substantially higher metabolic energy demands than cells in many other tissues, which makes them highly susceptible to damage caused by persistent oxidative stress. Recent studies have highlighted excessive production of reactive oxygen species and mitochondrial dysfunction in auditory cells as important pathophysiological mechanisms of hearing loss. These factors can cause microcirculatory disturbances in the inner ear, impair

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vascular function, reduce the supply of oxygen and nutrients, and induce apoptosis of hair cells, thereby impairing auditory signal transmission. In particular, hair cells are known to have very limited regenerative capacity after damage, which can limit the recovery of overall auditory function. If these processes become chronic, they may cause progressive impairment of auditory nerve function and further aggravate the symptoms of hearing loss.[2,3]

Hearing loss is not limited to a reduction in auditory function but is closely associated with cognitive and neurological problems, including cognitive decline and an increased risk of dementia, as well as psychological and social problems such as communication difficulties, social isolation, and depression. These consequences can ultimately lead to a marked deterioration in quality of life in older adults, and hearing loss has therefore become increasingly recognized as an important health problem. However, no established treatment is currently available to restore lost hearing through pharmacological or other interventions, and strategies aimed at preserving auditory function and slowing the progression of hearing loss, including the use of hearing aids, reduction of noise exposure, and lifestyle modification, remain the main management approaches.[4]

Recently, the importance of enhancing antioxidant capacity, improving mitochondrial energy metabolism, and promoting microvascular circulation has been emphasized as part of adjunctive strategies to slow the progression of hearing loss and preserve auditory function. Therefore, this case report describes a patient with symptoms of hearing loss who underwent Ortho-Cellular Nutrition Therapy (OCNT) and evaluates changes in auditory function and associated symptoms to assess its clinical effectiveness.

Case Study

1. Subject

One patient with hearing loss was included.

1) Name: Noh OO (80 years old at the time of OCNT / F)
2) Diagnosis: Hearing loss
3) Estimated onset: 2022–2023
4) Treatment period: May 2023–November 2023
5) Chief complaints: Bilateral hearing loss, headache, decreased concentration, communication difficulties
6) Past medical history: Tinnitus
7) Social history: Feelings of isolation due to communication difficulties
8) Family history: No information available
9) Present illness and current medications: Hypertension and hyperlipidemia with related medications being taken, osteoporosis

2. Methods

The OCNT regimen prescribed to the patient is presented in detail in Table 1.

Results

At 1 month after initiating OCNT, the patient reported that speech and surrounding sounds had become somewhat clearer and more distinct, although discomfort during conversation persisted. From the second month, the patient reported that sounds from the television, radio, and similar sources could be heard clearly. During this period, headaches and depressive symptoms that had accompanied the hearing loss from its onset also showed improvement. From the third month of OCNT, the patient reported less frequent need to ask others to repeat themselves, along with a significant reduction and eventual disappearance of aural fullness and pressure. With continued OCNT, by the end of the treatment period, discomfort during conversation had markedly decreased, speech and surrounding sounds could be heard more easily as auditory clarity improved, and difficulty communicating in noisy environments also gradually improved. The severity of discomfort reported by the patient during OCNT is presented in Table 2.

Table 1. OCNT prescribed to the patient.

Prescription \ Month	1	2	3	4	5
Cyaplex X Granules	101	101	101	101	101
Eufaplex Alpha Capsules	303	303	303	303	303
Viva Circu Capsules	101	101	101	101	101
NO Booster Capsules	202	202	202	202	202
Diverol Capsules	101	101	101	101	101

* Numeric notation indicates the number of packets, capsules, or tablets taken in the order of morning, afternoon, and evening.
0 indicates no intake.

Table 2. Severity of symptoms experienced by the patient during the course of OCNT. Higher scores indicate greater symptomatic discomfort, with scores ranging from 0 to 5.

Symptom \ Month		1	2	3	4	5
Hearing loss-related symptoms	**Difficulty understanding speech**	4	3	3	2	1
	Difficulty communicating in noisy environments	4	3	3	2	1
	Frequent need to ask others to repeat themselves	4	2	2	1	0
	Aural fullness and pressure	3	1	0	0	0
	Decreased concentration, feelings of depression	3	0	0	0	0
Headache		3	1	0	0	0

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

Discussion

The patient in this case was a Korean woman who was 80 years old at the time of OCNT. Since the onset of hearing loss, she had difficulty clearly understanding speech, frequently asked others to repeat themselves during conversations, and complained of difficulty understanding conversations overall. In particular, her symptoms worsened in environments with background noise, such as restaurants or social gatherings, and she reported social withdrawal and a sense of isolation as a result. She also complained of headaches and depressive symptoms associated with hearing loss, indicating substantial discomfort related to the condition. Therefore, OCNT was prescribed to support physiological mechanisms related to auditory function and hearing loss-related symptoms, thereby alleviating the associated discomfort.

Auditory cells exhibit very high metabolic activity owing to their functional characteristics and are therefore highly sensitive to oxidative stress and changes in blood supply. Accordingly, they are vulnerable to oxidative damage and reduced blood flow, making protective mechanisms against such damage particularly important. For this purpose, Cyaplex X and NO Booster were prescribed. Cyaplex contains anthocyanins derived from aronia. These compounds can activate the Nrf2-ARE pathway, a system involved in cellular defense against oxidative stress induced by reactive oxygen species. In addition, they are known to exert direct free radical-scavenging activity and thereby reduce oxidative stress.[5] NO Booster contains zinc and manganese. Among these, zinc is involved in maintaining the normal structure and function of superoxide dismutase (SOD), a key antioxidant enzyme. Manganese serves as a cofactor for mitochondrial manganese superoxide dismutase (MnSOD) and contributes to antioxidant defense by facilitating the removal of reactive oxygen species[6]

In addition, zinc is also known to contribute to improving systemic blood flow. Vasodilation and vascular relaxation are important mechanisms for maintaining adequate blood flow. To sustain these functions, appropriate levels of nitric oxide (NO) must be maintained in the body. Zinc may help protect endothelial cells and improve blood flow by activating endothelial nitric oxide synthase (eNOS), which is involved in NO production, and promoting NO generation.[7] *Ginkgo biloba* extract contained in Viva Circu may also support blood flow. Through its antioxidant activity by scavenging free radicals, G*inkgo biloba* extract can improve NO bioactivity and ultimately help enhance blood flow.[8] Through these effects, the aim was to improve blood flow to auditory cells and thereby increase the supply of oxygen and nutrients.

The cochlea, which is responsible for auditory function, has high energy requirements, and mitochondria within auditory cells are primarily responsible for generating this energy. Mitochondria are cellular organelles that produce adenosine triphosphate (ATP), a key source of cellular energy, and a decline in mitochondrial function results in reduced energy production. In this case, Eufaplex was prescribed to support mitochondrial energy metabolism. The alpha-linolenic acid contained in Eufaplex can regulate the fatty acid composition and fluidity of cell membranes, particularly mitochondrial membranes. By increasing the proportion of unsaturated fatty acids in cell membranes, it helps maintain membrane fluidity and support an environment favorable for oxidative phosphorylation, thereby contributing to mitochondrial respiratory function.[9] Accordingly, the aim was to improve mitochondrial energy metabolism and thereby support the patient's auditory function.

In addition to the nutrients described above, adequate vitamin D intake has been reported to be important for maintaining overall hearing function. Vitamin D regulates calcium absorption and homeostasis in the body and is involved in neural signal transmission within the auditory system as well as in the sensory transduction function of hair cells. In addition, a study involving 1,123 individuals aged 70 years or older showed that hearing loss in the low-frequency and speech-frequency ranges occurred approximately twice as frequently in individuals with vitamin D deficiency.[10] Therefore, adequate vitamin D intake in older adults may be important for maintaining hearing function, and Diverol was prescribed to provide vitamin D supplementation.

Through the OCNT described above, the patient reported a gradual reduction in hearing-related difficulties, with a marked decrease in the need to ask others to repeat themselves and difficulty continuing conversations because of impaired hearing. As a result, symptoms caused by hearing loss, including social withdrawal, decreased concentration, and depressive symptoms, also improved. Although this case may suggest that appropriate nutritional therapy may help alleviate hearing loss-related symptoms, the findings have limited generalizability to other patients with hearing loss because it involved only a single patient. Nevertheless, OCNT tailored to the patient's condition may improve hearing-related discomfort and quality of life, which is considered clinically meaningful. Therefore, this case is reported with the patient's informed consent.

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