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Special Article – Case Report

세포교정영양요법(OCNT)을 이용한 ICE 증후군 개선 사례 연구

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A Case study on improvement of ICE syndrome using Ortho-Cellular Nutrition Therapy (OCNT)

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ABSTRACT
Objective: A Case study on improvement of ICE syndrome through the use of OCNT.
Methods: OCNT was performed on a 45-year-old Korean female who had difficulty in opening the eyes widely due to painful and xerophthalmias, and suffered inconvenience in daily life due to myodesopsia.
Results: After the implementation of OCNT, the intraocular pressure (IOP) level was restored to normal, and the pain, dryness and myodesopsia symptoms were alleviated. This resulted in improvement in depressive symptoms and quality of life.
Conclusion: For patients suffering from problems such as elevated intraocular pressure, myodesopsia, and xerophthalmia, OCNT can be helpful in improvement and treatment of symptoms.

Keywords Ortho-Cellular Nutrition Therapy (OCNT), iridocorneal endothelial syndrome, ICE syndrome, xerophthalmia and myodesopsia

Introduction

Iridocorneal endothelial syndrome (ICE) is a group of three disorders, including Chandler's syndrome, iridocorneal nevus syndrome and progressive iridocycloplegia, whose etiology and mechanisms are unclear, but it is known to be an acquired disorder. It is characterized by a decrease in corneal endothelium and progression to closed-angle glaucoma secondary to iris adhesions, usually affecting only one eye, and is more common in women in their 30s and 40s. The membrane theory of pathogenesis is explained below in detail.

• Membrane theory

Abnormal corneal endothelium overgrows into the anterior chamber and iris, causing endothelial membrane contraction and peripheral anterior synechiae, thereby inducing corectopia, and iris atrophy and thinning. In severely atrophied areas, holes may form in the iris. Ectropion uvea may occur at the site of the displaced pupil.

Symptoms of ICE include blurred vision, accompaniment of pain, and confirmation of changes in the iris or pupil. To diagnose ICE, three characteristic symptoms, namely, change in the iris, corneal edema (swelling of the cornea) and the development of a form of glaucoma due to increased intraocular pressure, must be confirmed. It is difficult to suppress the manifestation progression of ICE with modern medicine, and the main focus needs to be on the management of glaucoma with medications (glaucoma medications) and glaucoma surgery (trabeculectomy) to lower IOP and reduce corneal edema. In some cases, cornea transplantation is required.

The patient in this case was suffering from ICE syndrome, which was causing her great inconvenience in her daily life. Progresses in the implementation of OCNT on this patient is reported since she tried several treatments and failed to achieve improvement in symptoms and was left with no other option but corneal transplantation.

Case

1. Subject

1 case of iridocorneal endothelial syndrome patient was used as the subject for this study.

1) Name: Jeong, ㅇㅇ (F/45 years old)
2) Name of diagnosis: Iridocorneal endothelial syndrome
3) Manifestation date: 2018
4) Treatment period: December 18, 2020~Present
5) Main symptoms: Eye pain, xerophthalmias, myodesopsia, difficulty opening eyes wide and depressed mood
6) Past medical history: None
7) Past social history: None
8) Past family history: None

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9) Current medical condition and medicine administered:
Monofrost Eye Drops and Dicuas Eye Drops

2. Method

A) Orally administered formulations
Cyaplex X Granule (202, 2 times a day, 2 sachets at a time)
Caroplex Granule (101, 2 times a day, 1 sachet at a time)
Collaplex Granule (101, 2 times a day, 1 sachet at a time)
Tmplex Granule (101, 2 times a day, 1 sachet at a time)
Eufaplex Granule (101, 2 times a day, 1 sachet at a time)
Aqua SAC Pure (5 ml/5 ml, 2 times a day, consume by mixing 5 ml with 500 ml of water at a time)
Heartberry Black (101, 2 times a day, consume by mixing 1 sachet with 500 ml of water at a time)
OCNT was implemented for 3 months in the above schedule.

<4th month>
(Changes/additions)
Cyaplex X Granule (101, 2 times a day, 1 sachet at a time)
Stemplex (101, 2 times a day, 1 sachet at a time)
Others are same as before

<7th month>
(Additions)
Cyaplex Mineral Bamboo Salt (100, consume by mixing with 500 ml of water once a day)
Others are same as before

<Present>
After reduction of doses of OCNT, the granule formulation was switched to capsule and OCNT is being maintained.

OCNT was continued with additional application of eye drops (glaucoma, xerophthalmia) concurrently but was discontinued after IOP normalized.
In terms of lifestyle, patient was advised to avoid flour foods, dairy products, instant foods in particular and foods fried in cooking oil, and to refrain from excessive staring of monitor and use of smartphone.

Results

The patient of this case, a 41-year-old female (December 2020), was expected to have significant eye strain due to the nature of her job, which was looking at a monitor screen. She had been receiving treatment for glaucoma (left eye) at the ophthalmology department of a local university hospital for two years before she had OCNT consultation, and her symptoms were aggravating over time. Her quality of life was greatly degraded due to pain and headaches to the extent of not being able to open her eyes. Her health condition of her eyes was very poor at the time with a corneal endothelial cell count of 500 ae/mm^2 (normal value is about 2000 ae/mm^2) after trabeculectomy (around March 2020). She also had myodesopsia, xerophthalmia and pupillary displacement. The only option left in modern medicine is a corneal transplant, with a waiting period of approximately 7 years. OCNT was implemented on this patient with the aforementioned situation with recommendation for additional dietary and lifestyle modifications. As the result, four months after OCNT, the IOP decreased (from 38 mmHg to 16 mmHg), which allowed the use of eye drop for glaucoma to be stopped, and myodesopsia in the right eye also improved. During this process, the left eye developed an myodesopsia, but it improved over time (Table 1). The most distinct change was that after trabeculectomy, she no longer had difficulty opening her eyes widely. Obviously, headaches and psychological depression also improved. However, the health of the patient's eye is less resilient due to weakened ability for restoration in the colder months of the year, such as winter. Accordingly, she is still continuing with OCNT at a reduced doses.

Considerations

Iridocorneal endothelial syndrome is a relatively rare disorder characterized by the overgrowth of abnormal corneal endothelial cells into the anterior chamber and iris, resulting in corneal edema, iris and reflex angle deformity, and secondary angle-closure glaucoma, and is rarely associated with a past family history.[1] A few cases of iridocorneal endothelial syndrome have been reported in Korea and the incidence of glaucoma is high in this condition, and surgical treatment is resorted to when it is not controlled by medication, but the success rate of surgery is not high. The patient in this case had been previously diagnosed with glaucoma and had a severe reduction in corneal endothelial cell count. From this perspective, the active anthocyanins in Cyaplex may help to improve the patient's high IOP and may help to reverse.

In fact, anthocyanins have been shown in animal studies to help regenerate rhodopsin and relax the shape of the eye, and improved ocular blood circulation has been reported, and anthocyanin supplementation is still recommended for eye health today.[2,3]It has been reported that corneal endothelial cells decrease by 0.6% per year in adults and 1.1% per year in adolescents.[4] Therefore, corneal endothelial cell loss is a natural

Table 1. The extent of symptoms experienced by the patient during OCNT. On a scale of 1 to 5, the greater the score, the greater the discomfort experienced by the patient.

Symptoms / Months		1 month	4 months	7 months	Present
Pain in the eyes		4	2	1	OCNT in progress
Depressive state		5	3	2	
Xerophthalmia		4	2	1	
Myodesopsia	Right	4	2	1	
	Left	(Cannot feel it)	4	0	
Intraocular pressure (mmHg)		Value of 38	Value of 16 (normal)	Normal value (stop applying eye drop for glaucoma)	

0: No symptoms, 1: Symptoms are mild and have little impact on daily life, 2: Symptoms are more pronounced, but require some adaptations to perform daily activities, 3: Symptoms significantly impact daily life, with difficulty performing some activities, 4: Significant difficulty performing activities during daily life and 5: Significant discomfort and stress in daily life.

part of aging. According to what has been known thus far, the cell cycle of corneal endothelial cells is arrested in the G1 phase and can be induced to differentiate in cultured cells, but no cases of differentiation have been reported in humans.[5] The number of corneal endothelial cells that can be clinically problematic is less than 1,000 and the number of endothelial cells that are actually problematic is approximately 400. Since this patient has a very low endothelial cell count of 500, the beta-carotene in Stemplex and Caroplex could be helpful in maintaining proper function. This is because it has been reported through animal experiment that beta-carotene has been reported to modulate the ionic pump, which helps the corneal endothelial cells to transport water molecules, regulate pH, and maintain cell proliferation and function.[6]

Xerophthalmia syndrome is a condition in which the body produces less tears, which is difficult to cure and is commonly treated with artificial tear drops to improve symptoms. At this time, hyaluronic acid is known to improve the stability of the tear film, evaporation, osmolarity, inflammation, ocular surface damage, as well as cellular health.[7] Although these effects typically occur when applied directly to the eye, recent reports have shown that hyaluronic acid supplementation is more effective in improving xerophthalmia symptoms. Accordingly, supplementing with hyaluronic acid through Collaplex could be helpful in alleviating symptoms.[8] Moreover, linolenic acid contained in Eufaplex has also been shown to improve ocular surface disease index, tear film stability, and reduce symptoms in patients with xerophthalmia.[9]

When the vitreous humor becomes turbid due to age-related changes or various ocular diseases, myodesopsia can be developed. This is often a natural part of aging, and aging is associated with degeneration of the vitreous humor structure and decreased antioxidant capacity. Free radicals generated by oxidative stress can cause the vitreous humor structure to dissociate and deform, and, in severe cases, damage to the retina may necessitate surgical treatment.[10,11]

Vitamin C contained in Heartberry Black prevents oxidative stress in the vitreous humor, and zinc, which is a compositional element of Aqua SAC and Cyaplex Mineral Bamboo Salt, promotes the synthesis of metallothionein, which is a protein that could be helpful in protecting the vitreous humor from degenerative mechanisms such as glycoxidation, thereby helping patients to improve their myodesopsia.[12-14] Previous clinical trials have shown that the antioxidant and vitamin C, which is an antiglycation micronutrients, zinc, and L-lysine, grape extract, and citrus extract significantly decreased the area of turbidity in vitreous humor in patients with myodesopsia, thereby reducing visual discomfort.[15]

This is a single case and cannot be applied to the general patient population, and there are obvious limitations in interpreting the results. However, this case is reported with the consent of the patient because it is believed that it is a case in which OCNT was helpful in alleviating and treating the symptoms of the patient for whom the corneal transplant was thought to be the only treatment available.

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