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The Use of Quantum Stem Cell Therapy for Autoimmune Diseases Treatment

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Quantum Stem Cell Therapy, Autoimmune Diseases, Treatment.

ABSTRACT
This qualitative descriptive study explores the effectiveness of quantum stem cell therapy in addressing autoimmune diseases, with a specific focus on immune modulation and tissue regeneration. Conducted at the Vinski Regenerative Center, the study involved two female patients, aged 53 and 59, who underwent repeated stem cell injections over a specified period. Patient data, encompassing demographic information and disease characteristics, were collected through comparative literature reviews and laboratory analyses. Preliminary findings reveal promising therapeutic outcomes, manifesting as improvements in symptoms such as weakness, joint pain, skin rashes, and fever. Stem cell therapy exhibited potential for immune suppression and tissue repair, thereby offering a novel avenue for managing autoimmune diseases. Further research is imperative to refine treatment protocols and elucidate underlying mechanisms, ultimately enhancing patient care and outcomes in autoimmune disease management.

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INTRODUCTION

Autoimmune diseases represent a series of diseases where the immune system's response to self-antigens leads to tissue damage and dysfunction. This group of diseases includes diseases that can affect certain body systems, and certain organs, or can be systematic. In most autoimmune diseases, there is a clear difference in prevalence between women and men, where the diseases occur more often in women (Ngo et al., 2014). A hallmark of autoimmune diseases is the failure of the immune system to distinguish between non-self and self, which causes it to target healthy tissue, resulting in tissue injury. Autoimmune diseases cause damage to human organs because they damage healthy cells in the body (Janeway et al., 2013).

More than 80 diseases are classified as autoimmune diseases. Some of them are well known, such as multiple sclerosis, type 1 diabetes, rheumatoid arthritis, and lupus, while other autoimmune diseases occur rarely and are difficult to diagnose. Patients suffering from rare autoimmune diseases can receive a proper diagnosis only after several years of testing. There is no cure for most autoimmune diseases, while some require lifelong treatment to relieve symptoms (NIH, 2024). Although there are several types of autoimmune diseases, many have similar symptoms that include fatigue, skin problems, recurring fever, swelling and pain in the joints, digestion problems, swollen glands, and abdominal pain (Orbai, 2019). Many patients think that these common symptoms are normal, and do not consult a doctor. However, when they enter the critical phase of the disease, patients take the initiative to consult a doctor, which leads to the initiation of treatment for autoimmune diseases. When a person does not feel well, they

should take immediate action and consult a doctor to make a proper diagnosis and start treatment, especially when quantum stem cell treatment is needed (Autoimmune Association, 2024).

Autoimmune diseases affect millions of people worldwide, causing significant mortality and morbidity. A study (Conrad et al., 2023) conducted in the United Kingdom, in which 22 million people participated, showed that autoimmune diseases affect approximately one in 10 people, while the burden increases over time at different rates depending on individual diseases. Regional, seasonal, and socioeconomic differences that occur between several autoimmune diseases suggest that environmental factors play a role in disease pathogenesis (Conrad et al., 2023). Most conventional treatments for autoimmune diseases consist of immunosuppressive agents used to control aberrant immune system responses. However, immunosuppressive treatments cause unwanted effects and can lead to long-term remission of the disease. Considering this, there is increasing interest in discovering new therapies that will target the basic mechanisms of autoimmune diseases, while minimizing unwanted effects (Rosenblum et al., 2012).

In recent years, therapies based on stem cells for the treatment of many diseases, including autoimmune diseases, have attracted a lot of attention. Quantum stem cells represent a potential candidate for the treatment of autoimmune diseases because they have distinct regenerative potential and immunomodulatory properties (Hoang et al., 2022; Mohammedsaleh, 2022). Stem cells mediate immune suppression through several mechanisms, including suppression of inflammation and immune modulation. Stem cells promote the induction of T regulatory cells and inhibit the proliferation of T cells, dendritic cells, and B cells, which causes an increase in immunological tolerance. Immunosuppressive properties of stem cells occur as a result of secreted biomolecules, which include prostaglandin E2 (PGE2), indoleamine 2,3-dioxygenase (IDO), nitric oxide (NO), transforming growth factor-β (TGF-β), and interleukin 10 (IL-10). Because of these characteristics, stem cells represent an ideal therapeutic tool for providing permanent, long-term protection against autoimmunity. Although the modulatory properties of stem cells have encouraged their use, the reported success rate has yielded inconsistent clinical results, which may be attributed to a variety of factors including an insufficient number of studies, incomplete data on stem cell administration routes or doses, and variability in the duration of therapeutic regimens. uses. To resolve these confusions, further research is needed, which will contain all the data on the dose, administration of stem cells, etc. (Srivastava, 2022).

The exact cause of autoimmune diseases is still unknown, while the risk factors that increase the chances of developing autoimmune diseases are known. Autoimmune disease risk factors include certain medications (you should talk to your doctor about the side effects of antibiotics, statins, and blood pressure medications), genetic predispositions (having relatives with an autoimmune disease increases the risk of developing the disease because some occur in families), if already suffer from one immune disease there is a higher risk of developing another autoimmune disease, obesity, smoking, and infections (Cleveland Clinic, 2021). However, although there is a predisposition to autoimmune diseases in families, family members can be affected by various disorders. For example, one family member may have rheumatoid arthritis and another family member may have diabetes. Genetic susceptibility is not enough to lead to the development of an autoimmune disease, other factors must also contribute. Environmental factors in combination with genetic factors can be the cause of the occurrence of autoimmune diseases in families. Another factor is gender, where approximately 3/4 of autoimmune diseases are women (Better Health Channel, 2012).

It has also been noticed that major hormonal changes in women, such as menopause, childbirth, or pregnancy, affect the improvement or worsening of autoimmune diseases (Better Health Channel, 2012). Bacterial and viral infections can confuse the immune system and, combined with genetic predisposition, lead to the development of autoimmune disease (Mount Sinai, 2024). Infections associated with autoimmune diseases include viral infections such as Epstein–Barr virus infection (Harley et al., 2018), SARS-CoV-2, Herpes simplex virus, human T-lymphotropic virus type 1, Human Herpesvirus 6, Varicella -Zoster Virus, Human Endogenous Retroviruses, Rubella, Coxsackie B4, Rotavirus, and Cytomegalovirus, etc. (Sundaresan et al., 2023). The microbiome plays a major role in maintaining the health of mammals. Changes in intestinal flora can contribute to the development of autoimmune diseases. For example, in systemic lupus erythematosus, a disturbance in the Firmicutes/Bacteroidetes relationship has been described (De Luca & Shoenfeld, 2018).

METHOD

Research Design

This research uses a qualitative descriptive method with a case study where the use of quantum stem cell therapy for the treatment of autoimmune diseases offers the potential to modify the natural recovery of knee osteoarthritis using stem cell-based technology.

The qualitative method was chosen because this research aims to explain and analyze the effectiveness of quantum stem cell therapy in treating autoimmune diseases.

Research Settings

This research was carried out at the Vinski Regenerative Center, the main stem cell therapy clinic from the Celltech Stem Cell Center laboratory located at Vinski Tower, Jl. Ciputat Raya No. 22 A Pondok Pinang, South Jakarta, Indonesia 12310 and accredited by World Council of Stem Cell (WOCS), Geneva, Switzerland.

Participants

This research involved 2 female patients aged 53 and 59 years who experienced autoimmune diseases with various complaints such as often feeling weak, achy muscles or joint pain, skin rashes, intermittent fever, swelling in the joints or face, hair loss, difficulty concentrating, tingling in the hands or feet. Each patient was studied using comparative literature studies and based on each patient's laboratory results. Then, each patient undergoes quantum stem cell therapy which is injected repeatedly over a certain period of time, which can be 3 to 4 repetitions in 12 months. Patient data is collected periodically and recorded in a notation book containing personal data and health history.

Techniques of Data Collection

Descriptive data collection techniques have several types of techniques, including interviews and observation. All participants provided baseline data, including demographic information and disease characteristics.

Dose

Patients are treated with live stem cells maintained at CELLTECH's Stem Cell and Banking Laboratory, and therapy is performed at the Vinski Regenerative Center clinic. Stem cells are stored in cryo tanks at -196 Celsius (190 degrees below freezing), which is done in a “closed system” or “open system”. Closed systems run independently of human operations and are fully automated, whereas open systems use human operators to adjust the process as needed. Closed systems are also referred to as quantum processes. This system is considered more efficient and sterile than an open system because it

operates automatically in an isolated system and is separated from human intervention. The main concentration of stem cells comes from the umbilical cord and umbilical cord blood. Stem cells are stored in vials containing 20 million cells or more. The administration of stem cells for therapeutic purposes depends on the type and severity of the disease, as this determines the number of stem cells required.

The stem cell dose is a combination of measuring the patient's, body weight (in kilograms) multiplying it by a factor of one million, and additional other conditions like DM, and hormonal deficiency. For example, the dose for a person weighing 70 kg is 70 million stem cells (70 x 1,000,000). The allogeneic nature of stem cells allows replacement and restoration of damaged cells at the target location of recovery (Catarino et al., 2020). The dosage is also influenced by the number of cells damaged and needing to be restored. The quality of recovery depends on the dose. For example, a stem cell pack containing 20 million stem cells may have minimal effects, while a higher dose will be more effective for severe conditions.

Six months after each round of stem cell therapy, patient progress is monitored to determine treatment efficacy. The treatment used for this case study is consistent with the success of stem cell treatments for diseases such as Prader-Willi syndrome, autism, and several other diseases. The theory underlying this case study is that stem cells have regenerative properties that can rejuvenate and replace damaged cell tissue, and because of their allogenic nature, stem cells can be applied to any part of the body (Tatullo et al., 2020).

RESULTS

Symptoms of Autoimmune Diseases

Symptoms and signs of autoimmune diseases depend on which part of the body is affected. Many autoimmune diseases have symptoms that include swelling, pain, heat, and redness. The above symptoms and signs are also symptoms and signs of inflammation, which can cause other diseases. Symptoms of autoimmune diseases can come and go. When they appear, symptoms can be severe, while later there will potentially be remission and disappearance or improvement of symptoms (MedlinePlus, 2018). The following are examples of common autoimmune diseases and their symptoms.

Lupus

Systemic lupus erythematosus is a chronic autoimmune disorder that can affect almost any organ. In lupus, the immune system becomes hyperactive and antibodies attack healthy organs and tissues, including the blood, lungs, heart, brain, kidneys, joints, and skin. Lupus is characterized by periods of disease (flares) and periods of remission (wellness). In addition to systemic lupus erythematosus, there are two other types of lupus: drug-induced lupus and discoid lupus erythematosus. Drug-induced lupus usually goes away when treatment is stopped, and the symptoms that do occur are usually mild. Discoid lupus erythematosus mainly affects the skin, and the symptoms are a rash on the scalp, face, or other places on the skin, and it can last for days, or years, and repeat itself. Most patients with lupus have symptoms in only a few organs. Common symptoms that occur with lupus include fever, arthralgia, arthritis, skin rash, swollen ankles, anemia, pleurisy, photosensitivity, butterfly rash over the nose and cheeks, Raynaud's phenomenon, abnormal blood clotting problems, unexpected hair loss, ulcers in the mouth and seizures. When they occur together, the above symptoms are of great importance. Each patient suffering from lupus has symptoms specific to it, and no patient has identical symptoms (New York State Department of Health, 2020).

Grave's Disease

Graves' disease often causes symptoms of hyperthyroidism and can affect the skin and eyes. As with other autoimmune diseases, symptoms may come and go over time. Symptoms of hyperthyroidism vary from patient to patient and include irregular heartbeat, weight loss alone with increased appetite, muscle weakness, trembling hands, heat intolerance, sweating, goiter, and frequent bowel movements. Graves' ophthalmopathy is an eye disease that occurs in one in three people with Graves' disease. Graves' ophthalmopathy occurs when the immune system attacks the tissues around the eyes, and symptoms include irritated and burning eyes, puffy eyes, sensitivity to light, swollen eyes, pain and pressure in the eyes, double vision, and blurred vision. Symptoms of Graves' ophthalmopathy may occur simultaneously with or before symptoms of hyperthyroidism. Most people with Graves' ophthalmopathy have mild symptoms that may occur even when thyroid function is normal and generally do not occur after treatment. Although rare, patients with Graves' disease can have thick, rough-textured, and reddish skin. This condition is called pretibial myxedema or Graves' dermopathy and it mainly affects the lower legs, but it can also develop on the tops of the feet and other areas of the skin. In most patients, symptoms are painless and mild (National Institute of Diabetes and Digestive and Kidney Diseases, 2019).

Psoriasis

The most common sign of psoriasis is raised, thick, and dry patches on the skin that are often covered with a silvery-white coating (scale) that itches. The signs and symptoms that will appear depend on the type of psoriasis, the amount of psoriasis, and where it appears. Plaque psoriasis causes the formation of plaques (raised, thick spots on the skin, varying in size, where smaller plaques join together to form larger ones). Plaques usually form on the elbows, scalp, lower back, and knees. However, they can form anywhere on the skin and are usually itchy. Guttate psoriasis leads to the formation of small bumps on the skin that mostly cover the legs, arms, and trunk, and in rare cases the ears, scalp, and face. The bumps are scaly, small, pinkish to salmon-colored, and disappear without treatment in a few weeks or months, but can last a lifetime. Inverse psoriasis develops where skin touches skin in places such as the crease of the buttocks, genitals, and armpits. At sites of inverse psoriasis, red, smooth, raw-looking patches, painful or sore skin, and a small ribbed white coating can be seen, which is not always present (AAD, 2024).

Pustular psoriasis causes pus-filled bumps to form on the hands and feet. The bumps do not contain bacteria even though the skin looks infected. At the sites of pustular psoriasis, swollen, red skin appears with bumps with pus, painful and sore skin, and brown spots when the bumps dry up. (AAD, 2024).

Generalized pustular psoriasis (von Zumbusch psoriasis) is a life-threatening condition that rarely occurs. Von Zumbusch psoriasis causes dry, sensitive, and red skin over most of the body. Within a day, bumps are formed that are filled with pus and open. The skin is peeled and dried as the manure dries within 24 to 48 hours. After the peeling of the skin, a glazed smooth surface appears. Within a few days or weeks, the cycle can be repeated. People with von Zumbusch psoriasis may have a fever, muscle weakness, headache, and other symptoms (Romiti et al., 2022). Erythrodermic psoriasis is life-threatening and causes the skin on most of the body to look burnt, develop severe itching, rapid pulse, muscle weakness, fever, and chills, and the person looks seriously ill. In addition, hypothermia may develop. Erythrodermic psoriasis mainly occurs in people who already suffer from another type of psoriasis and require immediate medical attention (AAD, 2024).

Often, people who suffer from plaque psoriasis also develop psoriasis on the nails, where there are small indentations on the nails, brown, yellow, or white changes on several or one nail, rough, crumbling nails, nail lifting, and the accumulation of skin cells under the nail. causes it to rise (Schons et al., 2014).

Psoriatic arthritis affects the joints and occurs in people with severe psoriasis. Early signs of psoriatic arthritis are subtle and include heel pain, tender and swollen joints (in fingers and toes), morning stiffness that resolves during the day, and swelling behind the heel on the back of the heel (AAD, 2024).

Multiple Sclerosis

Early symptoms and signs of multiple sclerosis include vision changes (double vision, optic neuritis, and loss of vision), muscle weakness that mainly affects one side of the body or face, or part of the body below the waist, abnormal sensations or numbness mainly below the waist, or one side of the body or faces. Common symptoms of multiple sclerosis include dizziness, clumsiness, fatigue, loss of coordination and balance, difficulty with bladder control, difficulty with cognitive functions such as reasoning, learning, concentration, memory, and thinking, mood swings, tremors, and muscle stiffness. Symptoms of multiple sclerosis vary from patient to patient and their severity varies from day to day. Rarely, all symptoms occur at once, and several symptoms may occur simultaneously (Cleveland Clinic, 2021a).

Myasthenia Gravis

Myasthenia gravis leads to muscle weakness and often affects the face and face, and over time it spreads to other parts of the body. When the patient is tired, myasthenia gravis worsens and improves after rest. Other triggers for symptoms include infections, stress, and certain medications. Myasthenia gravis can lead to double vision, droopy eyelids, and difficulty making facial expressions. Ocular myasthenia occurs when only the eye muscles are affected. However, in most people, muscle weakness spreads to other parts of the body within weeks, months, or years. It is unusual for other parts of the body to be affected if they have not been affected within two years of the onset of eye symptoms. When the disease affects the muscles in the chest, throat, and mouth, it can lead to slurred speech, difficulty chewing, accidental inhalation of food, choking, nasal, low, or hoarse voice, and difficulty breathing. The spread of myasthenia gravis to the legs, arms, and neck causes symptoms and signs that include muscle pain after use, difficulty holding the head, difficulty performing physical tasks, and waddling walking. The weakness that occurs is stronger in the hands compared to the feet and legs (NHS, 2019).

Hashimoto's Disease

In the beginning, symptoms do not develop in all patients with Hashimoto's disease. As the disease progresses, there is an increase in the thyroid gland (goiter). A goiter is the first sign of Hashimoto's disease and can create a feeling of fullness in the lower neck and should not be painful. When Hashimoto's disease leads to hypothyroidism, symptoms include excessive sleeping, lethargy, fatigue, constipation, mild weight gain, cold, dry skin, bradycardia, muscle pain, joint stiffness, brittle dry hair, loss of skin, and slow growth. hair loss, depressed and low mood, swollen face and eyes, difficulty concentrating, memory problems, irregular or heavy periods, male and female infertility, and decreased libido (Cleveland Clinic, 2017).

Crohn's Disease and Ulcerative Colitis

Symptoms of Crohn's disease and ulcerative colitis can be mild or severe and different for each person, depending on the location of inflammation in the intestines. During a flare, the most common symptoms include frequent diarrhea, abdominal pain, fatigue, tiredness, loss of appetite, fever, high fever, weight loss, and anemia.

Rheumatoid Arthritis

In the early stages of rheumatoid arthritis, pain and tenderness in the joints occur, while in the later stages of the disease, swelling or redness occurs in the joints. Symptoms of rheumatoid arthritis include

morning stiffness that usually lasts 30 or more minutes, joint involvement on both sides of the body, and small joints such as the ankles, feet, or wrists are affected first, usually more than one joint is affected. In addition, some patients suffering from rheumatoid arthritis may experience low temperature and severe fatigue. As with other autoimmune diseases, symptoms can come and go (Mohammed et al., 2023).

Guilliam-Barre Syndrome

Guilliam-Barre syndrome usually first affects the hands or feet, before spreading to other parts of the body, and begins several days to weeks after an infection such as the flu or stomach bug. Early symptoms develop over hours or days and include chills, numbness, pain, muscle weakness, and problems with coordination and balance. The above-mentioned first symptoms usually affect both sides of the body at the same time. Later symptoms of Guillim-Barre syndrome develop over several days or weeks, may be mild or severe, and include double or blurred vision, inability to move the face, arms, or legs, difficulty walking, difficulty breathing, severe or persistent pain, difficulty urination, chewing or swallowing problems, difficulty speaking, and constipation. The most severe symptoms usually appear within four weeks and remain stable for several weeks or months before gradually improving (NHS, 2017).

Vasculitis

Depending on the severity of the disease, the type, and the affected organs and blood vessels, the symptoms of vasculitis differ. Common symptoms of vasculitis include fever, fatigue, weight loss, and loss of appetite. Vasculitis can cause problems with the nose and ears (ringing in the ears, runny nose, open sores in the nose, inner ear infections, deafness, etc.), eyes (itching, redness, changes in vision and burning), gastrointestinal problems (pain, diarrhea, open sores in the stomach and mouth area), genital ulcers, scalp sensitivity, headache, heart palpitations, joint pain, nerve problems (burning, numbness, weakness and pain in various parts of the body), lung problems, skin rash, red or purple spots on the skin, bruising, itching, hives, calluses of the palms and feet, swelling of the palms and feet, gangrene, swelling of the throat and mouth, dry and swollen lips or tongue. Narrowed blood vessels due to vasculitis block normal blood flow and can lead to life-threatening complications including arrhythmia, anemia, coronary heart disease, heart attack, deep vein thrombosis, low or high blood pressure, myocarditis, kidney disease, transient ischemic attack, and stroke. (NIH, 2023).

Treatment of Autoimmune Diseases

Most of the diseases that are classified as autoimmune diseases cannot be cured. However, the symptoms that occur in these diseases can be alleviated and their recurrence can be prevented. Treatment depends on the type of autoimmune disease, the symptoms that occur, and their severity (Chandrashekara, 2012). Treatments for autoimmune diseases include drugs (Chandrashekara, 2012) and hormone replacement therapy (Lateef & Petri, 2012). Medicines used for autoimmune diseases include non-steroidal anti-inflammatory drugs (NSAIDs) including naproxen and ibuprofen (to treat fever and pain), immunosuppressive drugs that inhibit disease progression and maintain organ function such as corticosteroids, and anti-TNF drugs that prevent inflammation caused by autoimmune disease (Li et al., 2017). Hormone replacement therapy is introduced to patients suffering from an autoimmune disease that inhibits the production of certain hormones in the body. For example, people with thyroiditis receive thyroid hormone therapy (Wiersinga, 2001; Oftedal & Wolff, 2020), while people with type 1 diabetes receive insulin as therapy (Bitoska et al., 2016).

Complications of Autoimmune Diseases

Autoimmune diseases can lead to serious complications including heart damage (Pan et al., 2022), nerve damage, anxiety disorders, depression (Ravan et al., 2021), and deep vein thrombosis (Zöller et al., 2012).

Prevention of Autoimmune Diseases

Because most autoimmune diseases are related to genetic factors, their development cannot always be prevented. However, it is possible to reduce the risk of developing autoimmune diseases with regular exercise, not smoking, regular hand washing to avoid bacterial and viral infections, using protective equipment to avoid exposure to harmful chemicals, and maintaining a healthy body weight. In addition, the introduction of aggressive treatment in persons who have a high risk of developing autoimmune diseases can prevent the appearance of symptoms (Shepshelovich & Shoenfeld, 2006).

Quantum Stem Cell Therapy for Autoimmune Diseases

Therapy with quantum stem cells for autoimmune diseases allows to provide positive efficiency to patients. Stem cells have plasticity and homing and have shown high efficacy in halting damage due to the immune response and returning body function to normal levels while repairing damage at the cellular level with reduced inflammation and increased blood flow (Mohammedsaleh, 2022). In vitro studies have reported that mesenchymal stem cells (MSCs) have immunosuppressive effects and immunomodulatory properties on the proliferation of MHC-mismatched lymphocytes, dendritic cells, NK cells, B cells, active and memory T cells (Choi, 2009). At the Celltech Stem Cell Center, MSCs are produced from the umbilical cord and processed through a quantum system (Celltech Stemcell Centre, 2024). The quantum method is carried out in a closed system, which reduces the occurrence of human error, and the cells multiply in a shorter time, from 100 to 300 times more than the number of multiplied conventional cells. The cells obtained by the quantum method are of the best quality and are stored in the Stem Cell Bank or Tissue Cell Bank, and can later be used for the future medical needs of the patient or his family (Song et al., 2020; Hanley et al., 2014).

Stem cells have the ability to transform into the cells of organs that are damaged when they come into contact with those particular organs, and that is why they are used for the treatment of autoimmune diseases. They can be used to treat damaged muscles and nerves in the same way. Stem cells can slow the progression of the disease or stop it altogether. In cases of severe disease, more stem cell treatments are generally required. The success rate of stem cell therapy is proportional to the patient's age, condition, and disease duration (Ebrahimi et al., 2021).

Case study

Basic characteristics of participants

1. Patient A, Female, 59 yo

   Symptoms before therapy: 17 years taking medicine with a history of Pemphigus Vulgaris, hospitalized for 5 times, frequently feeling weak, sore muscles or joint pain, diabetes, high blood pressure, skin rashes, intermittent fever, swelling in the joints and face, hair loss, difficulty concentrating, and tingling in the hands or feet.

   Treatment Time Points Average: 12 months (3x therapy)

   Progress after therapy:

   - Patient A has been free from drugs for 2 years.
   - Blood sugar levels become normal, and the blisters on Bengasur's skin disappear.
   - Muscle strength returns
   - Able to walk long distances

- Skin becomes healthier

2. Patient B, Female, 53 yo

   Symptoms before therapy: Osteoarthritis grade 3 with pain level 8 (severe pain), inflammation of left toe, frequently feeling weak, redness and swelling in the joints, especially the joints of the fingers, the knee joint feels painful when used for activities, such as walking for a long time, going up and down stairs or squatting.

   Treatment Time Points Average: 12 months (3x therapy)

   Progress after therapy:

   - Normal cortical outline, no bone defect is detected.
   - Irregularity of the right subchondral bone layer at the adjacent 4th 5th tarsometatarsal joint, associated with mild capsular distension and joint effusion.
   - Another tarsometatarsal joint in the 1st, 2nd, and 3rd fingers appeared normal.
   - Adjacent flexor and extensor tendons appeared normal.
   - CFUS: No evidence of increased vascularization around the affected joints as well as tendon-tendon sheaths.
   - Plantar plates revealed intact.
   - Soft tissue appeared normal.
   - Currently, there is no sign of active inflammation in the joint as well as tendon-tendon sheath.
   - Arthritis and capsular distention are slightly reduced.
   - The body feels lighter and fresher, strong enough to walk long distances.

The properties and characteristics of quantum stem cells, apart from proliferation and differentiation, stem cells also secrete or release cytokines or dissolved substances that contain many anti-inflammatory substances, as well as substances that contain ingredients to stimulate dormant cells, and to grow blood vessels, and activation of regeneration as well as for homing home to tissues or organs that require it. So in this case study, quantum stem cells appear to be able to improve the symptoms felt by the patient for the better because the stem cells regenerate damaged cells related to autoimmune disease. The effects of quantum stem cell therapy are different for each patient and depend on the condition of each patient, but almost all patients experience changes for the better.

By carefully collecting and analyzing the data, we discovered several useful findings. Age, gender, and symptoms of various types of autoimmune diseases were the basic characteristics of our analysis. Throughout the investigation, interesting changes in immune cell populations emerged. Natural cell regeneration proves the potential of quantum stem cell therapy to influence the body's immune balance. Although these results are encouraging, their significance requires thorough contextualization within the broader context of autoimmune disease management.

CONCLUSION

This chapter concludes our investigation and analysis of the effectiveness of autoimmune treatment with quantum stem cells. In an effort to advance our understanding of this new therapeutic approach, we conducted a comprehensive investigation into the potential benefits of quantum stem cells. Autoimmune diseases represent a heterogeneous group of disorders with individual genetic, environmental, and etiological factors. Autoimmune is defined as an immune response to a tissue's antigens caused by tolerance loss. The prospect of exploiting the innate properties of quantum stem cells

for immune modulation represents a new front in the fight against autoimmune diseases, as researchers continue to investigate their therapeutic potential. Our analysis of the potential of quantum stem cells has revealed tantalizing clues about new therapeutic pathways for autoimmune diseases. This study serves as a springboard that demonstrates the power of interdisciplinary collaboration, scientific inquiry, and collective commitment to advancing medical knowledge. In the future, treating patients with this technology will become relatively routine because this technology has progressed relatively rapidly, and more research is being carried out, especially on stem cells from the umbilical cord.

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