JOURNAL OF WORLD SCIENCE
https://jws.rivierapublishing.id/index.php/jws
**Volume 1 No. 1 January 2024**
P-ISSN: 2828-8726
E-ISSN: 2828-9307

# THE MIRACLE OF STEM CELL THERAPY FOR POST-STROKE PATIENTS WITH TYPE 2 DIABETES

**Deby Susanti Pada Vinski[1], Natasha Cinta Vinski[2]**
Celltech Stem Cell Centre Laboratory And Banking, Jakarta, Indonesia

drdeby@eradunia.com[1], natashacintavinski@gmail.com[2]

**ABSTRACT**
The objective of this research is to explain and analyze the miraculous effectiveness of stem cell therapy in treating post-stroke patients, particularly those with diabetes, and to study the consistent properties of this treatment method. The research method employed is a case study that administered stem cell therapy to five post-stroke patients with diabetes, aged between 53 and 72 years. Patient care records, including evaluations and analyses, serve as the primary data source for this study. The stem cells utilized in the therapy are derived from products cultured by the CELLTECH Stem Cell and Banking Laboratory, with processes undergoing thorough quality reviews. The study demonstrates that stem cells have proven to be capable of repairing damaged cells, especially in post-stroke therapy. Some patients undergoing therapy at the CELLTECH Stem Cell Center have successfully recovered and regained the ability to walk. These results are reinforced by a series of laboratory tests confirming their efficacy. Treatments conducted at the Vinski Regenerative Center also show positive research outcomes, enhancing confidence in the clinic's medical services. The implications of this research suggest that stem cell therapy could be an effective method in treating post-stroke patients with diabetes. The positive outcomes of this research could also bolster public trust in medical services provided by stem cell therapy centers such as CELLTECH Stem Cell Center and Vinski Regenerative Center. Further studies and the development of stem cell therapies may open new possibilities in the treatment of post-stroke and related conditions.

**Keywords:** Stroke, Stroke Therapy, Stem Cells, CELLTECH.

Corresponding Author: Deby Susanti Pada Vinski
E-mail: drdeby@eradunia.com

## INTRODUCTION

Strokes occur when the brain is deprived of oxygen, carried to the brain via blood flow (Murphy & Werring, 2020). If the overall blood flow to the brain is reduced, blood pressure inside the brain becomes disrupted. In healthy individuals, blood pressure in the brain is regulated by the autoregulation of the carotid sinus and baroreceptors inside blood vessels within the neck (Kuriakose & Xiao, 2020). However, the aging process can cause these blood vessels to harden and become stiff over time, resulting in the onset of fatty deposits that increase the risk of stroke (Madsen et al., 2020). If blood is thick, which occurs when there are excessive blood cells, blood flow becomes restricted (Kuriakose & Xiao, 2020).

Similarly, conditions such as leukemia, anemia, dehydration, and blood clotting can also restrict blood flow to the brain (Murphy & Werring, 2020). When the blood supply to the brain is reduced or prevented altogether, the brain becomes starved for oxygen and disrupted. The manifestation of this reduced blood flow to the brain is a stroke, regardless of the condition that precipitated the reduction in blood flow (Murphy & Werring, 2020).

**When Does a Stroke Occur?**

A stroke occurs when blood flow to the brain is disrupted, resulting in the brain cells becoming starved for blood (Kuriakose & Xiao, 2020). The absence of oxygen causes brain cells to become damaged and eventually die. A minor disruption often results in a transient ischemic attack, which is a minor form of stroke that may produce no visible symptoms (Powers, 2020). However, the two major types of strokes are ischemic stroke and cerebral hemorrhagic stroke. An ischemic stroke results from a blockage of the brain, often caused by a blood clot or other blockages, such as an accumulation of fatty deposits within the brain's blood vessels (Powers, 2020). Fatty deposits are stiff and rigid, preventing blood flow altogether (Viedma-Guiard et al., 2021). The disruption can result from blockages inside the brain or in another part of the body, such as an embolism (Viedma-Guiard et al., 2021). Common blockages tend to originate in the heart and neck's blood vessels. Fat granules within the heart can be released into the bloodstream; at this point, they can become stuck inside one of the blood vessels carrying blood to the brain, stopping or inhibiting blood flow (Murphy & Werring, 2020).

A cerebral hemorrhagic stroke occurs when a blood vessel inside the brain ruptures entirely, often due to a buildup of pressure caused by a blockage (Alsbrook et al., 2023). The result of a cerebral hemorrhagic stroke is uncontrolled bleeding in the brain, which generally makes this form of stroke potentially more catastrophic (Montano et al., 2021). The majority of strokes are ischemic strokes, although an ischemic stroke can also cause catastrophic damage to the brain if not treated immediately (Madsen et al., 2020).

**Symptoms**

The human brain is like a map that consists of different regions. Each region is responsible for a different aspect of the brain's functioning. Depending on the brain region affected by a stroke, different symptoms might occur (Joy & Carmichael, 2021). Additionally, the symptoms will depend on the size of the blockage or disruption and the region of the brain vessel where the disruption occurs (Griffis et al., 2020).

The initial symptoms of a stroke can include a tingling sensation caused by elevated blood pressure, muscle weakness, sluggish movements, and general forgetfulness (Mendelson & Prabhakaran, 2021). These symptoms can be overlooked as symptomatic of a stroke. However, symptoms can also escalate in severity, with a partial or complete loss of vision; difficulties moving the eyes; difficulties with speaking or understanding speech; movement impairments and loss of balance; loss of bladder function; and possibly a coma, particularly for those experiencing a hemorrhagic stroke (Mendelson & Prabhakaran, 2021). Strokes can also cause partial paralysis, typically occurring on one side of the body (Mizuta et al., 2020). If a blockage or rupture occurs in the brain's left hemisphere, the symptoms will appear on the right side of the body (Mizuta et al., 2020). For instance, a person experiencing a stroke that originates in the left hemisphere of their brain may have difficulty moving their right arm or right leg. Conversely, a person experiencing a stroke that originates in the right hemisphere might show symptoms of paralysis in the left side of the body.

During an ischemic stroke, the patient will often retain consciousness (Alsbrook et al., 2023). During a hemorrhagic stroke, which occurs when a brain vessel is ruptured, the patient will often

lose consciousness (Viderman et al., 2020). Coma can also result from a hemorrhagic stroke (Viderman et al., 2020).

**Early Signs and Indicators**

Several conditions can indicate that a stroke is imminent. Everyday hand movements and gestures can become more complex, which might be revealed if one suddenly has difficulty with writing due to a loss of dexterity in the fingers (Soto-Cámara et al., 2020). A signature that suddenly becomes messy, difficulties combing hair, challenges with using buttons and snaps on clothing, and difficulty tying shoelaces can all indicate that a stroke is imminent (Soto-Cámara et al., 2020). Additional symptoms include unexplained dizziness, frequent forgetfulness, insomnia, excessive snoring, delirious thoughts, and shortness of breath (Khalil & Lahoud, 2020). Although each of these symptoms can be attributed to a range of different conditions, the sudden emergence of these symptoms as a cluster is generally a warning sign of an imminent stroke.

**Risk Factors**

Several risk factors can contribute to the onset of an ischemic or hemorrhagic stroke. First, those who have had a heart attack or stroke previously are more likely to experience a stroke, as even if they have recovered from the initial incident, their cardiovascular system is still most likely compromised to some degree (Feske, 2021). Second, those with high blood pressure, high cholesterol, and a hardening of the arteries are also at increased risk of stroke, as well as an increased risk of a cardiac event (Hankey, 2020).

Diabetes, smoking, and obesity can also increase the risk of stroke (Hankey, 2020). Those with diabetes often have elevated blood sugar levels, which in turn contributes to the accumulation of fatty deposits while simultaneously constricting blood vessels. Smoking can weaken blood vessels, elevate blood pressure, and trigger the formation of clots. Obesity contributes to the buildup of fatty deposits that can also create blockages (Hankey, 2020).

Individuals aged 65 and older are also at increased risk of stroke, while men are 30% more likely to experience a stroke than women (Carcel et al., 2020). In addition, those who have had episodes of atrial fibrillation and arrhythmias are at increased risk due to a tendency to have more blood clots, as are those with elevated red blood cell counts, as elevated red blood cells, correlate with increased blood thickness, contributing to the likelihood of a clot (Soto-Cámara et al., 2020). Finally, anyone with a family history of stroke is also at increased risk (Marini et al., 2020). In sum, the risk factors for stroke are:

a. Individuals with a history of strokes or heart attack
b. Individuals with high blood pressure and high cholesterol
c. Diabetes (Type I and II), smoking, and obesity
d. Individuals aged 65+
e. Those with a history of atrial fibrillation and arrhythmias
f. Individuals with an elevated red blood cell count
g. A family history of stroke.

**Stroke Prevention**

Control risk factors can prevent stroke, especially for those at risk (Hankey, 2020). If the risk factors are mitigated and blood flow to the brain remains healthy, then the risk of stroke is drastically reduced. The one exception is the risk factor associated with age, as aging can naturally contribute

to blood pressure fluctuations (Hankey, 2020). Advanced age can also cause the brain's blood vessels to close suddenly due to prolonged and constant stress on the vessel (Khalil & Lahoud, 2020). Several medications used to treat high blood pressure can also result in a stroke, which occurs when there is an overdose of high blood pressure medication that causes blood pressure to drop dramatically (Murphy & Werring, 2020). In these instances, the stoppage of blood flow to the brain is attributed to weak blood pressure. Thus, even if other risk factors are controlled, an overdose of blood pressure medication can suddenly induce a stroke, even if no other risk factors are present. As such, the risk factors contributing to strokes can be controlled to some degree via healthy diet and exercise, as these help one manage blood pressure naturally. However, the risk factors cannot be subverted entirely, particularly as one advances in age (Hankey, 2020).

**Stem Cells as a Stroke Therapy**

Stem cells are cells generated within tissues, such as fat tissue and bone marrow tissue, that are used to eventually replace cells that have died or been damaged (Guan et al., 2022). Stem cells can develop into various mature cells, such as nerve cells, heart muscle cells, skeletal cells, pancreatic cells, and so forth (Guan et al., 2022). Once matured, stem cells can replicate and regenerate themselves, creating new copies of themselves via cell division. In theory, stem cells can rejuvenate cellular growth throughout the body, rejuvenating organs that have been damaged over time (Kimbrel & Lanza, 2020).

## METHOD

The case study included five patients with Type 2 diabetes and elevated cholesterol levels (hypercholesterol) who previously experienced a stroke, resulting in side effects that included difficulty walking, frequent headaches, weak muscles, dragging movements, feelings of numbness in the extremities like hands and feet, fatigue, forgetfulness, and negative/poor disposition. The patients ranged between 53 and 72 years of age. Four of the patients were male, while one of the patients was female. Each patient was treated with two rounds of quantum stem cell therapy.

Patient data was collected regularly and recorded in a notation book that included personal data and medical history. Each of the patients volunteered for stem cell therapy. Even though stem cells can be utilized for many different medical conditions, they have yet to become standardized as a primary treatment method. As such, each patient who undergoes stem cell therapy deliberately chooses stem cell therapy instead of traditional therapies or in conjunction with traditional therapies. In this case study, patients underwent hormonal therapy and lifestyle modifications, such as changing diet and exercise routines.

Patients were treated with living stem cells maintained and cared for in the CELLTECH Stem Cell and Banking Laboratory. The stem cells were stored in a cryo-tank at a temperature of -1900 Celsius (190 degrees below the freezing point), which is carried out by either a "closed system" or an "open system." The closed system runs independently from human operation and is entirely automated, while the open system uses human operators to adjust processes as necessary. The closed system is also referred to as a quantum process. It is considered more efficient and sterile than the open system, as it operates automatically in an isolated system separated from human interventions. The CELLTECH Stem Cell and Banking Laboratory owns each system.

The main concentration of stem cells was sourced from umbilical cords and umbilical cord blood. The stem cells were stored in vials containing 20 million cells or more. The provision of stem cells for therapeutic use depends on the type and severity of the disease, as this determines the quantity of stem cells required.

**Dosage**

The dosage of stem cells is calculated by measuring the patient's weight (in kilograms) and multiplying by a factor of one million. For instance, the dosage for a person who weighs 70 kg is 70 million stem cells (70 x 1,000,000). The allogeneic properties of stem cells allow replacing and restoring damaged cells in the target recovery location. The dosage is also affected by the number of cells that have been damaged and need to be restored. The quality of recovery depends on the dosage. For example, a package of 20 million stem cells might have minimal effect, while a higher dosage would be more effective for severe conditions.

Six months after each round of stem cell therapy, patients were monitored for progress to determine the efficacy of the treatment. The treatment used for this case study aligns with successful stem cell treatments for diseases such as Prader-Willi syndrome, autism, and several others. The underlying theory informing the case study is that stem cells have regenerative properties that can rejuvenate and replace damaged cell tissues, and because of their allogeneic properties, they can be applied to any part of the body.

## RESULTS AND DISCUSSION

The results of the study are presented in the tables below. Glucose levels and HbA1c (hemoglobin) levels were also measured at three different times: 1) the baseline result before treatment, 2) the results following the first treatment, and 3) the results following the second treatment.

**Table 1 Before Quantum Stem Cell Therapy**

| Patient | Age | Sex | Symptom | Glucose at a given time Result 1 | Glucose at a given time Result 2 | Glucose at a given time Result 3 | HbA1c |
|---|---|---|---|---|---|---|---|
| A | 58 | Male | Stroke, DM type 2, Hypercholesterol, hypertension | 430 | 410 | 400 | 11,2 |
| B | 70 | Male | DM type 2, Hypercholesterol | 400 | 310 | 300 | 10.4 |
| C | 69 | Male | DM type 2 hypercholesterol | 330 | 290 | 280 | 10,5 |
| D | 72 | Female | DM anemia hyper cholesterol | 300 | 250 | 230 | 11 |
| E | 53 | Male | DM type 2 Hypercholesterol | 450 | 410 | 380 | 12,5 |

**Table 2 After Quantum Stem Cell Therapy 1**

| Patient | Age | Sex | Symptom | Glucose at a given time Result 1 | Glucose at a given time Result 2 | HbA1c |
|---|---|---|---|---|---|---|
| A | 58 | Male | DM Type 2 Hypercholesterol, hypertension | 300 | 180 | 7,5 |
| B | 70 | Male | DM Type 2 Hypercholesterol, hypertension | 210 | 110 | 7,1 |
| C | 69 | Male | DM Type 2 anemia, Hypercholesterol, hypertension | 160 | 115 | 6,5 |
| D | 72 | Female | DM Type 2 Hypercholesterol, hypertension | 150 | 155 | 8 |
| E | 53 | Male | DM Type 2 Hypercholesterol | 220 | 200 | 7,2 |

**Table 3 After Quantum Stem Cell Therapy 2**

| Patient | Age | Sex | Symptom | Glucose at a given time Result 1 | Glucose at a given time Result 2 | HbA1c |
|---|---|---|---|---|---|---|
| A | 58 | Male | Stroke | 140 | 120 | 6,2 |
| B | 70 | Male | DM Type 2 Hypercholesterol, hypertension | 160 | 155 | 5,7 |
| C | 69 | Male | DM Type 2 Hypercholesterol, hypertension | 115 | 110 | 5,8 |
| D | 72 | Female | DM Type 2, anemia, Hypercholesterol, hypertension | 96 | 90 | 5,4 |
| E | 53 | Male | DM Type 2 Hypercholesterol, hypertension | 170 | 120 | 5,9 |

Each of the five patients showed a reduction in glucose and HbA1c. For instance, Patient A, a 58-year-old male with Type 2 diabetes, hypercholesterol, hypertension, and previous experience with a stroke, initially presented with a glucose level of 430. After the first round of quantum stem cell therapy, the same patient presented a glucose level of 300, which was reduced even further to 140 following the second round. HbA1c levels dropped from 11.2 to 6.2 following the second round of quantum cell therapy. These results were consistent among all patients, showing drastic reductions in glucose levels and HbA1c across the board. Thus, the treatment proved effective in patients between and ofle, revealing improvements in both male and female patients. The study also reveals that the patients improved further following a second round of stem cell therapy.

Each patient reported improved symptoms associated with stroke, including improvements in mobility and feelings of increased strength. Those with mobile impairments requiring the assistance of a wheelchair or walking cane also reported improvements in their mobile functioning as they reduced their reliance on additional mobility assistance. Blood glucose levels were also normalized

after the second quantum stem cell therapy round. At the same time, all patients reported improved mood, increased activity, and overall quality of life.

## CONCLUSION

Quantum stem cell therapy shows considerable promise regarding its ability to treat those who have experienced a stroke with a history of diabetes type 2. All the symptoms in these post-stroke patients include muscle weakness, fatigue, difficulty walking, numbness, difficulty speaking clearly, and mood changes, which in turn were caused by damage to brain cells when the stroke initially occurred. Based on the descriptive qualitative research method with case study and research criteria, comparative literature study, and according to the laboratory results of the patient from the qualified and certified laboratory on five patients between the ages of 53 and 72, two reported increased mobility and improved mood following the stem cell treatments, with some patients able to regain mobile functioning that had been impaired since the initial stroke. These results suggest that quantum stem cell therapy has a miraculous ability to rejuvenate cells that were damaged during a stroke and also improve pancreatic cells, which show a lower blood sugar. All patients show improvement in the ability to walk, a better mood, muscle strength, and a better lifestyle. The main limitation of the study is the small sample size. As such, future research suggests that expanding the sample size and conducting a more widespread study would help corroborate the initial study's results. Based on the results provided, quantum stem cell therapy appears to be highly promising for its ability to treat stroke victims and improve their quality of life.

## REFERENCES

Alsbrook, D. L., Di Napoli, M., Bhatia, K., Biller, J., Andalib, S., Hinduja, A., Rodrigues, R., Rodriguez, M., Sabbagh, S. Y., & Selim, M. (2023). Neuroinflammation in acute ischemic and hemorrhagic stroke. *Current Neurology and Neuroscience Reports*, *23*(8), 407–431.

Carcel, C., Woodward, M., Wang, X., Bushnell, C., & Sandset, E. C. (2020). Sex matters in stroke: a review of recent evidence on the differences between women and men. *Frontiers in Neuroendocrinology*, *59*, 100870.

Feske, S. K. (2021). Ischemic stroke. *The American Journal of Medicine*, *134*(12), 1457–1464.

Griffis, J. C., Metcalf, N. V, Corbetta, M., & Shulman, G. L. (2020). Damage to the shortest structural paths between brain regions is associated with disruptions of resting-state functional connectivity after stroke. *NeuroImage*, *210*, 116589.

Guan, J., Wang, G., Wang, J., Zhang, Z., Fu, Y., Cheng, L., Meng, G., Lyu, Y., Zhu, J., & Li, Y. (2022). Chemical reprogramming of human somatic cells to pluripotent stem cells. *Nature*, *605*(7909), 325–331.

Hankey, G. J. (2020). Population impact of potentially modifiable risk factors for stroke. *Stroke*, *51*(3), 719–728.

Joy, M. T., & Carmichael, S. T. (2021). Encouraging an excitable brain state: mechanisms of brain repair in stroke. *Nature Reviews Neuroscience*, *22*(1), 38–53.

Khalil, H. M., & Lahoud, N. (2020). Knowledge of stroke warning signs, risk factors, and response to stroke among Lebanese older adults in Beirut. *Journal of Stroke and Cerebrovascular Diseases*, *29*(5), 104716.

Kimbrel, E. A., & Lanza, R. (2020). Next-generation stem cells—ushering in a new era of cell-based therapies. *Nature Reviews Drug Discovery*, *19*(7), 463–479.

Kuriakose, D., & Xiao, Z. (2020). Pathophysiology and Treatment of Stroke: Present Status and Future

Perspectives. *International Journal of Molecular Sciences*. https://doi.org/10.3390/IJMS21207609

Madsen, T. E., Khoury, J. C., Leppert, M., Alwell, K., Moomaw, C. J., Sucharew, H., Woo, D., Ferioli, S., Martini, S., & Adeoye, O. (2020). Temporal trends in stroke incidence over time by sex and age in the GCNKSS. *Stroke*, *51*(4), 1070–1076.

Marini, S., Anderson, C. D., & Rosand, J. (2020). Genetics of cerebral small vessel disease. *Stroke*, *51*(1), 12–20.

Mendelson, S. J., & Prabhakaran, S. (2021). Diagnosis and management of transient ischemic attack and acute ischemic stroke: a review. *Jama*, *325*(11), 1088–1098.

Mizuta, N., Hasui, N., Nakatani, T., Takamura, Y., Fujii, S., Tsutsumi, M., Taguchi, J., & Morioka, S. (2020). Walking characteristics including mild motor paralysis and slow walking speed in post-stroke patients. *Scientific Reports*, *10*(1), 11819.

Murphy, S. J., & Werring, D. J. (2020). Stroke: causes and clinical features. *Medicine (Abingdon, England : UK Ed.)*. https://doi.org/10.1016/J.MPMED.2020.06.002

Powers, W. J. (2020). Acute ischemic stroke. *New England Journal of Medicine*, *383*(3), 252–260.

Soto-Cámara, R., González-Bernal, J. J., González-Santos, J., Aguilar-Parra, J. M., Trigueros, R., & López-Liria, R. (2020). Knowledge on signs and risk factors in stroke patients. *Journal of Clinical Medicine*, *9*(8), 2557.

Viderman, D., Issanov, A., Temirov, T., Goligher, E., & La Fleur, P. (2020). Outcome predictors of stroke mortality in the neurocritical care unit. *Frontiers in Neurology*, *11*, 579733.

Viedma-Guiard, E., Guidoux, C., Amarenco, P., & Meseguer, E. (2021). Aortic sources of embolism. *Frontiers in Neurology*, *11*, 606663.