

Silent Stroke -a Drag on Quality of Life

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Abstract

A stroke is a condition because of something blocking blood supply to part of the brain or when a blood vessel in the brain bursts disrupting the blood supply to a particular portion of the brain. In either case, parts of the brain become damaged or die, manifesting as lasting brain damage, long-term disability, or even death. Symptoms include dizziness, numbness, weakness on one side of the body, and problems with talking, writing, or understanding language.

Most of us have heard or seen of a case of a stroke, with symptoms like slurred speech, loss of balance, difficulty speaking, and so on - but not many know that one can have a stroke without even knowing it? known as a silent stroke or Mini-stroke or asymptomatic cerebral infarction. A silent stroke refers to a stroke that doesn't cause any noticeable symptoms. It is recognized by a brain (CT scan or an MRI) imaging that will show white spots or lesions where your brain cells have stopped functioning. Brain scans can detect one or multiple silent strokes. Most silent strokes are caused by a clot that blocks a blood vessel in the brain. The blockage prevents blood and oxygen from reaching that area, causing nearby brain cells to die. While in the middle-aged people with no apparent signs of stroke about 10% have brain damage from one and this rate increases to 25% among people over 80 years. The damage that happens is permanent, but therapy might help stimulate other parts of the brain so you regain abilities that may have weakened. Common Silent Stroke Symptoms include sudden lack of balance, temporary loss of basic muscle movement slight memory loss and sudden changes in mood or personality and issues with cognitive skills and ability. As different parts of our brain control different parts of our body, our symptoms will depend on the part of our brain affected and the extent of the damage but usually begin suddenly. Therefore, it is critical to seek diagnosis and treatment as soon as possible. The chances of getting a stroke go up among elderly, diabetes, hypertensives, persons with heart disease, vascular disease, or atrial fibrillation. The management of silent strokes involves prescribing medications for blood thinning, to lower blood pressure, blood sugar, and serum cholesterol medications to lower low-density lipoprotein (LDL) cholesterol.

The significant burden of stroke on the mortality rates in India, is well-documented, but robust data regarding the aggregates of evidence on the quality of life (QOL) of stroke survivors is limited. Therefore, it is critical to seek diagnosis and treatment as soon as possible.

Material & Methods:

This manuscript is based on a real case study in last 15 months. Chidambar a male of 70 years with history of Diabetes for over 15 years and Hypertension for 10 years, both poorly controlled. He had left sided hemiparesis following a stroke in January 2022, that resulted in left sided hemiparesis, speech, and cognitive signs. Since early 2023 he is suffering frequent falls, vomiting, urinary incontinence, changing moods and worsening memory and dementia indicative recurrent silent strokes, that have worsened his quality of life. Review of literature and published articles have added value to this article.

Keywords: stroke; silent stroke; diabetes; hypertension; tia

Introduction

A stroke is a condition as a result of something blocking blood supply to part of the brain or when a blood vessel in the brain bursts disrupting the blood supply to a particular portion of the brain. In either case, parts of the brain

become damaged or die, manifesting as lasting brain damage, long-term disability, or even death [1]. Symptoms include dizziness, numbness, weakness on one side of the body, and problems with talking, writing, or

understanding language. Strokes are classified into 2 main categories- 1. Ischemic strokes- caused by blockage of an artery or, in rare instances, a vein. About 87% of all strokes are ischemic, and 2. Haemorrhagic stroke. caused by bleeding and form about 13% of all strokes [1,2]. The burden of stroke is increasing in India; is now the fourth leading cause of death and the fifth leading cause of disability. Current research suggests that the incidence of stroke in India ranges between 105 and 152/100,000 people per year [3].

Most of us have heard or seen of a case of a stroke, with symptoms like slurred speech, loss of balance, difficulty speaking, and so on - but not many know that one can have a stroke without even knowing it? This is known as a silent stroke, and it can cause the same damage to our brain. A silent stroke refers to a stroke that doesn't cause any noticeable symptoms. Most silent strokes are caused by a clot that blocks a blood vessel in the brain. The blockage prevents blood and oxygen from reaching that area, causing nearby brain cells to die. A study of middle-aged people with no apparent signs of stroke found that about 10% had brain damage from one. For every person who has a stroke with symptoms, about 14 others have a silent stroke. Researchers estimate that more than one-third of people over age 70 have had a silent stroke in 2016 [4] and one in four people over the age of 80 had suffered at least one silent stroke in their lives in 2021 [3]. The damage that happens is permanent, but therapy might help stimulate other parts of the brain so you regain abilities that may have weakened. As different parts of our brain control different parts of our body, our symptoms will depend on the part of our brain affected and the extent of the damage. The signs and symptoms of a stroke vary from person to person, but usually begin suddenly. Common Silent Stroke Symptoms include sudden lack of balance, temporary loss of basic muscle movement slight memory loss and sudden changes in mood or personality and issues with cognitive skills and ability. Therefore, it is critical to seek diagnosis and treatment as soon as possible. Even a doctor can be certain that an individual has suffered a silent stroke after receiving a brain scan (an MRI or CT scan) A person who is elderly or has diabetes or high blood pressure is at higher risk of silent stroke. Silent strokes are different from other types of strokes like ministrokes, ischemic strokes, and haemorrhagic strokes. The commonly observed stroke symptoms include [2,4,5]:

- i. Face: the face may have dropped on 1 side, the person may not be able to smile, or their mouth or eye may have drooped.
- ii. Arms: the person may not be able to lift both arms and keep them there because of weakness or numbness in one arm.
- iii. Speech: –Speech may be slurred or garbled, or the person may not be able to talk at all despite being awake and some may not understand, what others are saying to them.
- iv. Changes in mood or personality: These modifications can range from obvious to subtle. The person is more irritable than before or become sad at the drop of a hat. Exhibiting or feeling less like oneself indicates that the individual recently had a silent stroke.

- v. Trouble remembering things: This sign goes beyond simply forgetting where one has put one's keys. S/He may start forgetting people's names, location names, and other things that weren't an issue before, may be an indication that you're developing dementia.
- vi. Falling more frequently: Anyone can lose their balance from time to time, but if one keeps falling, s/he may be in trouble. A silent stroke can affect not only our balance, but also our muscles and how you interpret spatial differences.
- vii. Temporarily, muscles do not work well: One may notice a temporary change in how our muscles function if we have a silent stroke. If our urinary bladder muscles are weak, the patient may have difficulty holding your urine.
- viii. Inability to concentrate: Given that strokes cause brain damage, it's not surprising that the patient may have difficulty concentrating, the change in cognitive function becomes permanent and it worsens over time for some people [1,2,4,5]

Ministroke (Temporary Ischemic Attacks-TIA): These are temporary strokes with symptoms like trouble in walking, blindness in one eye or cuts in your field of vision, sudden & severe headache, dizziness and confusion. The main causes for TIA are blood clots, high blood pressure, narrowed arteries, high cholesterol, and diabetes [7].

Ischemic stroke: The are characterised by weakness in arms, legs, or face, speech difficulties, trouble in walking, blindness in one eye or cuts in your field of vision, sudden, severe headache, dizziness, confusion, lasting longer than 24 hours. symptoms may resolve in time or become permanent disabilities. The main causes are blood clots, high blood pressure, narrowed arteries, high cholesterol and diabetes [7].

Haemorrhagic stroke: The signs and symptoms are same as above, and may resolve in time or become permanent disabilities. The key causes are bleeding in your brain because of high blood pressure, drug use, injury, and aneurysms [7].

International Journal of Stroke, an international consortium provided contemporary stroke statistics for the year 2022. The crude annual incidence of stroke ranges between 41/100,000/year and 297/100,000/year in different countries. The crude incidence and one month case fatality rates of stroke continue to decrease in high-income countries and increase in low- and middle-income countries. The 28- to 30-day case fatality ranged between 10% and 40%. This study estimates that 1.57 million (1,573,961 - 48%) of all deaths from ischaemic stroke were in men and remaining 52% were women (all ages) numbering 1.72 million (1,719,435) of all deaths from ischaemic stroke [10,11].

1 IN 6 DIES OF STROKE IN LIFETIME

WORLD STATS	INDIA STATS
20 million people suffer from stroke every year. It causes five million deaths	1.5 million people suffer from strokes every year
5 million people are rendered disabled because of stroke	3,000-4,000 Indians suffer from stroke every day
➤ One in six persons gets a stroke in his/her lifetime	➤ Strokes cause more deaths in the country than malaria, tuberculosis and HIV combined

According to a 2021 study published in Neurology India, the stroke burden in India is quite high, and ischemic stroke is the most common accounting for around 80% of total stroke cases in India. Nearly 700,000 people in India

died because of stroke in 2019, which was 7.4% of the total deaths in the country that year [6]. A report by the Indian Stroke Association indicates that approximately 18 lakh stroke cases are reported every year in India. Stroke

is presently the third leading cause of mortality and the sixth leading cause of disability adjusted life years in India.

Based on a selected nine studies -three population-based registries, three population-based registries also using community-based and three community-based door-to-door surveys, from cities of Mumbai, Trivandrum, Ludhiana, Kolkata, the state of Punjab, and 12 villages of Baruipur in the state of West Bengal. The total population denominator was 22,479,509 and 11,654 (mean 1294 SD 1710) people were identified with incident stroke. Crude incidence of stroke ranged from 108 to 172/100,000 people per year, crude prevalence from 26 to 757/100,000 people per year, and one-month case fatality rates from 18% to 42% [5].

Multiple Silent Strokes:

Even after surviving a stroke, an individual is not out of the woods, as 25% of them are more likely to have another. The stroke recurrence rate remains controversial. The risk of stroke recurrence is reported to range from 7.0 to 20.6% over the first year, from 16.2 to 35.3% over the first 5 years, and from 14 to 51.3% over the first 10 years after the initial stroke [6]. The Risk factors for silent stroke include uncontrolled hypertension, diabetes mellitus, hyperlipidaemia, sleep apnoea, and obesity. Despite the likelihood of making a full recovery, life expectancy after stroke incidents can decrease. Indian researchers have reported an average reduction in lifespan by nine and a half years. Apart from that the quality of life deteriorates after every recurrent episode. However, robust data on the quality of life (QOL) of stroke survivors is limited.

Case Report:

Chidambar male patient of 70 years, a known diabetic and hypertensive for last 15 years, both conditions poorly managed for last one year. On 10/03/2023 he fell while going to bathroom. HE ATE ABOUT 5 Idli's as breakfast and was disoriented. I saw him later in the evening around 0800 Pm. The blood sugar had shot up to 410/Dl and BP was 128/89. He had no strength to even stand on his own. Had passed urine without his knowledge. The muscle power on earlier affected left side was much worse and even the right extremities were weak. I put him on 20 units of Insulin and Tab Metformin 500 mg BD after lunch and dinner. As he was aggressive was put on Chlorpromazine 100 mg once at night. As he was drowsy most of the next day, we reduced the Chlorpromazine to 25 mg. He continues to be on the same treatment and is bale to manage on his own, with clear signs of silent stroke. In the immediate past (on 27th February 2023 afternoon) he had similar episode i.e he fell without any tripping, was lifted, and put on the bed by his son. He was semi-conscious and passed urine and stools soiling the bed without his knowledge. I visited late in the evening and noted Blood sugar was 406 mg/Dl. He was disoriented and was finding it difficult to recognise known people. on physical examination his muscle power in both lower and upper extremities was poor and knee jerk reflexes were absent on both sides. The sensations (fine touch, temperature, and pain) in lower limbs were poor. BP was 167/100. He was given 20 units of plain Insulin and small feed. Fasting sugar on 28/02 /23 was 247 mg/Dl and BP had come down to 111/68. He has been having episodes of vomiting and falls twice since January 2022. On 1 February 2023 his fasting Blood sugar was 339mg/DL. BP was 177/76 mm Hg. There was a pedal oedema, and he was on Lasix tablet for the same. He was disoriented and was unable to control bowel movements and urination. Suspecting silent stroke his BP by increasing the betablocker drugs and blood sugars with 20 units of Insulin and Tab Metformin 500 mg BD after lunch and dinner. He was mostly bedridden and had stopped walking etc. While he was taking the drugs regularly for about a fortnight, on 21 late night he asked for food complaining of hunger. After eating he committed and fell while going to bathroom.

He had left sided hemiparesis and urinary incontinence following stroke in early 2022. He was bedridden and depressed most of the days refusing to be disciplined. His LVEF was 50% on 31 December 2022 and continues to be the same.

Discussions:

Silent brain stroke, doesn't have any symptoms and is thus difficult to identify. There are chances that individual may not even know if he had suffered one. Usually, it is accidentally discovered when they go for a brain scan for issues like headache, cognitive issues, or dizziness. Silent brain stroke unlike the usual stroke damages a small part of brain and people may have slight mobility or memory issues that may pass off as ageing process. When Silent strokes occur, a clot blocks a blood vessel in the brain, and cause damage to a small part of the brain and hardly noticed for want of warning symptoms." Subtle signs of a silent stroke can be mistaken for regular signs of aging like – difficulty in balancing, with bladder control, mood changes and reduced ability to think etc [2,4,5].

A meta-analysis of 16 studies systematic review of participants in the hospital-based setting with an average duration of 3-6 months following the stroke episode indicated that the pooled mean quality of life in the four dimensions of the World Health Organization Quality of Life instrument (WHOQOL-BREF) were ranged from 46.86 to 61.37 and the overall Stroke Specific Quality of Life scale (SS-QOL) mean score was 157.16. There was a significant inconsistency among the included studies as heterogeneity was high ($I^2 > 97\%$) [11].

Indian studies have reported that around 14% of global DALY have been lost due to stroke. [2] It has been reported that 50–70% of stroke survivors regain functional independence, but 15–30% are permanently disabled, and 20% require institutional care at 3 months after onset. Most patients survive the initial event and even subsequent episodes of silent stroke as is in our case. They live with multiple disabilities such as hemiparesis, rigidity, and neuropsychological impairment. The stroke imposes multiple limitations on sensorimotor, cognitive, and behavioural levels, posing a significant challenge in functional independence, and results in restrictions in the personal, social, and occupational role, thereby immensely affecting the QOL [6, 11].

In another population-based, cross-sectional studies and cohort studies from India published during 1960 to 2015 were included. A total of 10 population-based cross-sectional studies were included. The cumulative incidence of stroke ranged from 105 to 152/100,000 persons per year, and the crude prevalence of stroke ranged from 44.29 to 559/100,000 persons in different parts of the country during the past decade [12].

Most of the studies in India were conducted in the southern part of India in states like (Kerala Tamil Nadu, Karnataka, and Andhra Pradesh in which the age of the study subjects was largely in the late fifties. It was observed that many of the studies included subjects with a duration of 3–6 months following the stroke episode.

A cross sectional study in India found that out of 165 patients having acute ischemic stroke, 65 had first episode of stroke and 100 were found to have recurrence of ischemic stroke. Among the patients with first stroke 23 (35.38%) had anaemia and 42 had normal haemoglobin. Whereas among the patients with recurrent ischemic stroke 62 (62%) had anaemia (P value <0.001) and 38 had normal haemoglobin. Even after adjusting for confounding factors the odds of anaemia was associated with recurrent ischemic stroke by three times higher ($p=0.001$). This significant association between anaemia and recurrent ischemic stroke, suggests that with more than 25% of men and 57% women being anaemic in India, adds to recurrent strokes burden in India [13].

Despite the likelihood of making a full recovery, life expectancy after stroke incidents decreases. Indian researchers have observed a wide range of life expectancy changes in stroke patients, but the average reduction in lifespan is nine and a half years [14]. The helplessness of repeated falls, poor control over urination and episodes of vomiting deserves more research attention.

After a stroke, a special care plan involving three common tactics for improving quality of life and regaining basic functionality after a stroke include 1) Physical therapy, 2) Occupational therapy and 3) Speech therapy. A practical suggestion for each of the strategy include.

Physical therapy: By performing rehabilitation exercises and balance exercises one can improve one's general ability to use and control their body.

Seniors can rebuild lost muscle control and maintain healthy joints, both of which are crucial for everyday function.

Occupational therapy (OT): It helps patients to regain the skills, cognitive function, and body control needed to perform everyday tasks like cooking, bathing, dressing, and eating, drinking, writing, and using the toilet. OT focus on specific movements and procedures needed for these common tasks.

Speech therapy: Speech therapy helps stroke patients regain their speech and cognitive abilities. After an evaluation from a speech therapist to determine their care needs.

Stroke recovery can present major challenges for seniors and the general population, and healing can be a long road. With the help of your loved one's care team, stroke recovery is possible, and many people regain the functions they had before stroke after consistent, significant therapies.

Conclusion:

A silent stroke or Mini-stroke or asymptomatic cerebral infarction, is a stroke that doesn't cause any noticeable symptoms. It is recognized by a brain (CT scan or an MRI) imaging that will show white spots or lesions where your brain cells have stopped functioning.

Currently it is estimated that one in four people over the age of 80 had suffered at least one silent stroke in their lives in 2021, and even the family doctor may fail to recognise and consider it as ageing process.

Sudden lack of balance, temporary loss of basic muscle movement, slight memory loss and sudden changes in mood or personality and issues with cognitive skills and ability in persons over 50 years must alert and the individual subject to CT scan or MRI.

All affected individuals must have access to Physiotherapy, occupational therapy and if needed speech therapy and help of their loved one's care.

Healthy habits that can minimize the chances of silent stroke include: i) a good control over blood pressure and getting it under control if it's too high by medication and diet ii) Checking serum cholesterol and keeping LDL's under control by consuming Oatmeal, oat bran and other high-fiber foods iii) monitor blood sugar (Hb1Ac) levels and maintain them at the right levels by

diet, exercise and medications iv) Quitting smoking v) Cut back on saturated fats (found in red meat, for example), salt, and sugar, vi) Eat a healthy diet that includes plenty of fresh fruits, veggies, and whole grains. vii) Get regular exercise and Keep to a healthy weight.

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