

CASE REPORT

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Chronic challenges in a 63-year-old male with diabetes, hypertension, and recurrent right pontine infarcts

Shashi Prakash

ABSTRACT

Introduction: Cerebrovascular accidents (CVAs), particularly ischemic strokes, are a major global health concern and a leading cause of morbidity and mortality. Patients with underlying conditions such as diabetes mellitus and hypertension are at significantly increased risk due to associated vascular complications, including atherosclerosis and endothelial dysfunction.

Case Report: This case study presents a 63-year-old male with a complex medical history of type 2 diabetes mellitus and hypertension, both of which played critical roles in the progression of his condition. Initially, the patient presented in November 2022 with mild gastrointestinal symptoms and abnormal serological findings indicating a positive Widal test for Salmonella typhi. Despite a stable cardiac assessment, he was later admitted in April 2023 due to chest pain and elevated blood sugar levels, where further echocardiographic studies revealed mild concentric left ventricular hypertrophy and grade 1 diastolic dysfunction. The clinical course took a significant turn when, in May 2023, the patient developed sudden onset left-sided weakness and slurred speech, leading to a diagnosis of an acute right pontine infarct via magnetic resonance imaging (MRI). This neurological event was compounded by a history of intermittent fever and previous laboratory findings that suggested ongoing infections. Following conservative management, the patient was discharged but returned in July 2023 with altered sensorium and subsequent recurrence of right pontine infarcts. The interplay between the patient's comorbidities—specifically diabetes, hypertension, and cardiovascular issues—was crucial in understanding the

pathophysiology of his recurrent strokes. Additionally, factors such as potential infectious processes and lifestyle changes contributed to his deteriorating condition.

Conclusion: This case underscores the importance of multidisciplinary management and continuous monitoring of patients with complex medical histories to improve outcomes, highlighting the need for aggressive prevention strategies in similar high-risk populations to mitigate the impact of recurrent cerebrovascular events and enhance overall quality of care.

Keywords: Cerebrovascular accident (stroke), Diabetes mellitus type 2, Hypertension, Ischemic stroke, Pontine infarct

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INTRODUCTION

Cerebrovascular accidents (CVAs), commonly referred to as strokes, represent a significant public health concern worldwide. According to the World Health Organization (WHO), stroke is the second leading cause of death globally, accounting for approximately 11% of total deaths [1]. The consequences of strokes extend beyond mortality, as they can result in long-term disabilities that profoundly affect patients' quality of life and impose substantial economic burdens on healthcare systems. Among the various types of strokes, ischemic strokes account for approximately 87% of all cases, typically resulting from the obstruction of blood flow to the

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brain due to thrombosis or embolism [2]. Patients with pre-existing medical conditions, particularly diabetes mellitus and hypertension, are at significantly elevated risk for ischemic strokes. Studies have shown that these comorbidities contribute to a range of pathophysiological changes in the vascular system, such as endothelial dysfunction and accelerated atherosclerosis, which increase susceptibility to thromboembolic events [3]. Diabetes mellitus affects approximately 463 million people globally, and its prevalence continues to rise [4]. This chronic condition is associated with various complications, including cardiovascular disease, which further complicates the clinical management of affected patients. Hypertension, often termed the “silent killer,” is another major risk factor for stroke, with a significant proportion of the population affected by elevated blood pressure levels. It is estimated that nearly 1.3 billion adults worldwide suffer from hypertension, which is directly linked to increased stroke incidence [5]. The coexistence of diabetes and hypertension is particularly concerning, as these conditions interact synergistically to worsen cardiovascular outcomes, increasing the risk of ischemic strokes [6]. This case study presents a 63-year-old male with a medical history of type 2 diabetes mellitus and hypertension who experienced recurrent right pontine infarcts. The right pontine region of the brain is critically involved in various motor and sensory pathways, and ischemic events in this area can lead to profound functional impairments, including hemiparesis, dysarthria, and loss of coordination [7]. The presentation of acute neurological symptoms often necessitates immediate medical intervention, as timely management can significantly influence patient outcomes. The patient’s initial presentation in November 2022 was characterized by gastrointestinal symptoms and abnormal serological findings. A positive Widal test suggested a potential infection, highlighting the importance of evaluating infectious processes in patients with complex medical histories [5].

Subsequent admissions revealed escalating health concerns, including chest pain, elevated blood glucose levels, and echocardiographic findings of left ventricular hypertrophy and diastolic dysfunction, further complicating his clinical picture [8]. By May 2023, the patient developed acute neurological deficits, leading to the diagnosis of a right pontine infarct, confirmed by MRI. The recurrence of these infarcts underscores the multifaceted nature of stroke risk, influenced by the interplay between diabetes, hypertension, and potential infectious processes. The decision to transition the patient to palliative care reflects the understanding that recurrent strokes, compounded by significant comorbidities, necessitate a focus on quality of life and symptom management rather than aggressive curative measures. This case highlights the critical need for comprehensive management strategies that consider the complex interactions between various health conditions. It serves as a reminder of the importance of early

identification and intervention in high-risk populations, emphasizing the role of interdisciplinary approaches in improving patient outcomes. Understanding the underlying mechanisms and risk factors for stroke in patients with diabetes and hypertension can guide healthcare providers in developing effective prevention and management strategies.

CASE REPORT

The subject of this case study is a 63-year-old male with a significant medical history of type 2 diabetes mellitus (non-insulin dependent) and hypertension, managed with Glimepiride, Metformin, and Telmisartan. The patient first presented in November 2022 with mild gastrointestinal symptoms, including intermittent abdominal pain and nausea. During his initial evaluation, laboratory investigations revealed a hemoglobin level of 12.8 g/dL and serological tests indicating a positive Widal result for *Salmonella typhi*, suggesting a possible underlying infection. His blood sugar level was found to be elevated at 136.7 mg/dL, indicative of inadequate glycemic control. Despite the gastrointestinal symptoms, the patient’s cardiovascular assessment was stable. However, the presence of diabetes and hypertension raised concerns about potential long-term vascular complications. The patient’s management included lifestyle modifications, medication adherence, and routine monitoring of his blood pressure and blood glucose levels. In April 2023, the patient was admitted again, this time presenting with chest pain that raised alarms about possible cardiac complications. Upon admission, his vital signs indicated hypertension, with a blood pressure reading of 146/86 mmHg. Laboratory tests showed a hemoglobin level of 13.5 g/dL and a significant increase in blood sugar levels 166.2 mg/dL, 186.4 mg/dL, now recorded at 252 mg/dL. The echocardiographic assessment revealed mild concentric left ventricular hypertrophy (LVH) and grade 1 diastolic dysfunction, suggesting that his hypertension and diabetes were contributing to cardiovascular strain. In the subsequent weeks, the patient experienced recurrent episodes of fever and gastrointestinal discomfort, which raised suspicions of a persistent infection. By May 2023, he developed acute neurological symptoms, including sudden onset left sided weakness and slurred speech. A neurological assessment led to an MRI, which confirmed an acute right pontine infarct. The right pontine region is crucial for various motor and sensory pathways, and infarcts in this area can lead to significant functional impairments, including hemiparesis and difficulties in speech. Compounding these challenges was a history of intermittent fever, suggesting the possibility of an ongoing infection that could exacerbate his neurological condition (Figure 1).

MRI Findings: The MRI results confirmed an acute right paramedian pontine infarct, characterized by hyperintense areas on diffusion-weighted imaging and

corresponding hypointense areas on apparent diffusion coefficient maps. Chronic lacunar infarcts were also noted in the periventricular white matter, indicating previous cerebrovascular events. The location of the infarct within the pontine region underscores its critical role in motor and sensory pathways, leading to the observed clinical manifestations. After the initial diagnosis, the patient was managed conservatively, including antiplatelet therapy, rehabilitation, and continuous monitoring of his cardiovascular and metabolic status. He was discharged but returned to the hospital in July 2023 with worsening symptoms, including altered sensorium and loss of speech, leading to a diagnosis of recurrent right pontine infarcts. Follow-up imaging confirmed the presence of new ischemic changes in the right pontine region, indicating recurrent CVAs. The patient's clinical deterioration was compounded by weight loss (decreasing from 53 kg to 48 kg) and continued inadequate glycemic control, with an HbA1c level of 7.89% indicating ongoing diabetes management challenges. Due to the complexity of his medical condition and recurrent strokes, the decision was made to transition the patient to palliative care. This approach aims to enhance his quality of life, focusing on symptom management and providing support for both the patient and his family. Palliative care emphasizes a holistic approach to managing the patient's needs, including physical, emotional, and spiritual support. This transition reflects a commitment to prioritizing the patient's comfort and dignity in the face of significant health challenges (Figure 2).

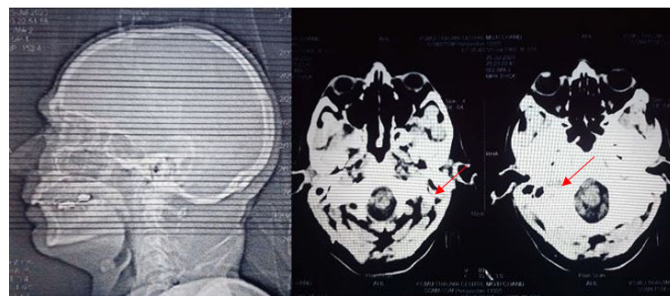


Figure 2: Axial CT brain images showing hypodense areas in the posterior circulation suggestive of infarction (highlighted by red arrows).

The interplay between his comorbidities—diabetes, hypertension, and cardiovascular issues—was crucial in understanding the pathophysiology of his recurrent strokes. Additionally, the role of potential infectious processes and lifestyle factors further complicated his clinical picture. This case underscores the importance of a multidisciplinary approach to patient management, emphasizing the need for continuous monitoring and aggressive prevention strategies in similar high-risk populations.

DISCUSSION

The case of this 63-year-old male patient with recurrent cerebrovascular accidents (CVAs) provides a complex interplay of medical factors that contribute to the occurrence and recurrence of ischemic strokes, particularly in the context of his comorbidities. Understanding these factors is crucial for developing effective management and prevention strategies. Diabetes mellitus and hypertension are two significant risk factors for stroke, and their presence in this patient cannot be overstated. Diabetes contributes to endothelial dysfunction, which compromises the integrity of blood vessels and accelerates the atherosclerotic process. This progression leads to the formation of plaques that can obstruct blood flow, resulting in ischemic events [3]. Additionally, the inflammatory milieu associated with diabetes further exacerbates vascular damage and increases thrombotic risk. Studies have demonstrated that patients with diabetes are more likely to experience recurrent strokes, emphasizing the critical need for stringent control of blood glucose levels to mitigate these risks [6]. Hypertension, often termed the “silent killer,” contributes to the pathophysiology of stroke through its effects on vascular walls, leading to hypertensive changes that can predispose patients to both ischemic and hemorrhagic strokes. The persistent elevation of blood pressure results in vascular remodeling and stiffening, which can also promote left ventricular hypertrophy (LVH) [8]. This condition not only signifies cardiac strain but is also closely linked to increased stroke risk due to

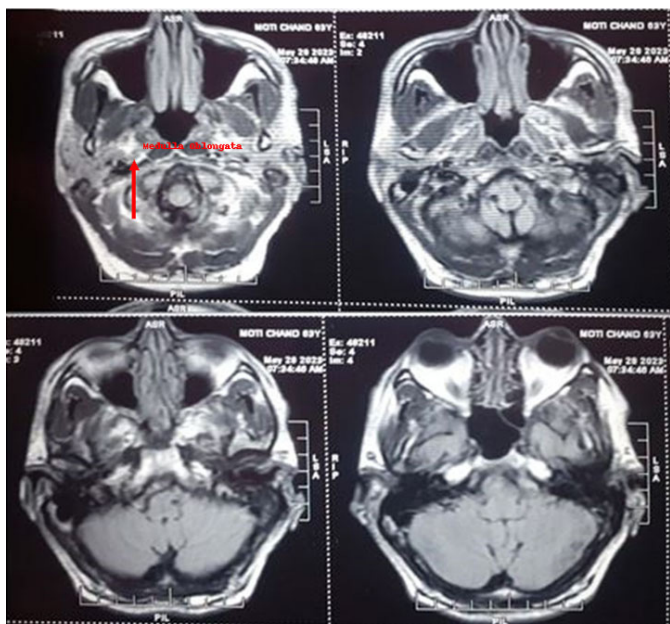


Figure 1: Axial T1-weighted MRI brain images showing chronic ischemic changes in the medulla oblongata region (indicated by red arrow).

potential cardioembolic events arising from turbulent blood flow and stasis in the heart. The echocardiographic findings in this patient, which indicated mild concentric LVH and grade 1 diastolic dysfunction, add further complexity to his clinical picture. Left ventricular hypertrophy is often a consequence of chronic hypertension and is associated with increased risks of adverse cardiovascular events, including strokes [8]. Diastolic dysfunction complicates the heart's ability to fill properly, which can lead to decreased cardiac output and, ultimately, inadequate cerebral perfusion during episodes of increased metabolic demand, such as exercise or stress. Furthermore, patients with LVH and diastolic dysfunction are at risk for the development of atrial fibrillation, a known risk factor for cardioembolic strokes. While the echocardiogram in this case did not confirm atrial fibrillation, the potential for such a development underscores the need for ongoing cardiac monitoring and management in patients with similar profiles. The history of positive Widal tests and recurrent fevers in this patient raises critical questions regarding potential underlying infections. Infections can exacerbate existing comorbidities, leading to acute inflammatory responses that can precipitate vascular events [5]. For instance, infections can increase pro-inflammatory cytokines and other markers of inflammation that might destabilize atherosclerotic plaques, increasing the likelihood of thromboembolic events. Moreover, the stress associated with acute infections can lead to transient increases in blood pressure and glucose levels, further complicating the management of chronic conditions like diabetes and hypertension. Understanding the infectious profile of such patients is essential, as certain infections have been linked to higher rates of stroke, particularly in populations already burdened by chronic diseases. Despite adherence to prescribed medications, lifestyle factors played a significant role in the patient's clinical deterioration. The patient experienced a notable weight loss from 53 kg to 48 kg, which could be indicative of several issues, including poor nutritional intake, medication side effects, or the impact of chronic illness on his overall health [7]. Weight loss can negatively influence glycemic control, further aggravating his diabetes and heightening stroke risk. Inadequate glycemic control, as evidenced by an HbA1c level of 7.89%, highlights the challenges in managing diabetes effectively. While the American Diabetes Association recommends an HbA1c target of less than 7% for most adults, achieving this target is often complex in the context of comorbidities and other health challenges. The combination of poor glycemic control and weight loss can create a vicious cycle that exacerbates the patient's overall health status and increases vulnerability to stroke. The involvement of the right pontine region in this patient's strokes is particularly significant. The right pontine area is integral to numerous motor and sensory pathways, meaning that infarcts here can lead to profound and lasting neurological deficits, such as right-sided hemiparesis and dysarthria [7]. The recurring

nature of his infarcts highlights the need for aggressive preventive strategies, particularly in patients with multiple risk factors. This case emphasizes the critical importance of comprehensive management strategies that address all contributing factors. Aggressive control of hypertension and diabetes, continuous cardiovascular monitoring, and a multidisciplinary approach to care can significantly improve outcomes. Additionally, regular screenings for infectious processes, as well as dietary and lifestyle modifications, are vital components of managing such complex patients.

A notable limitation of this case is the unavailability of diffusion-weighted imaging (DWI), which is considered the gold standard for detecting hyperacute ischemic strokes. However, in this case, diagnosis was supported by findings from computed tomography (CT) and MRI sequences, including T1-weighted and FLAIR imaging, which provided sufficient evidence of pontine infarction in the subacute phase. The absence of DWI, as well as T2-weighted imaging, limited the ability to fully assess lesion acuity, extent of parenchymal involvement, and perilesional edema. Incorporating these sequences in future imaging protocols is recommended to enhance diagnostic accuracy and lesion characterization. This case also reflects a common challenge in resource-limited settings, where access to advanced imaging modalities may be restricted, necessitating reliance on available imaging techniques for timely diagnosis and management.

CONCLUSION

This case study underscores the critical influence of diabetes mellitus and hypertension on recurrent cerebrovascular accidents in a 63-year-old male patient. It highlights the importance of comprehensive management strategies that not only target these comorbidities but also consider lifestyle factors and potential infectious processes that can exacerbate the patient's condition. Effective outcomes in similar high-risk populations necessitate aggressive monitoring and control of blood glucose and blood pressure levels. Additionally, interdisciplinary approaches should be employed, incorporating dietary modifications, physical activity, and patient education to support better health management. Future research should focus on developing targeted interventions that address these interconnected factors, aiming to reduce stroke recurrence and improve the overall quality of care for patients with complex medical histories. By enhancing prevention strategies and care protocols, healthcare providers can significantly impact morbidity and mortality rates associated with cerebrovascular events. This multifaceted approach not only aims to improve patient outcomes but also enhances the quality of life for individuals at risk, ultimately fostering a more proactive healthcare model for managing chronic conditions.

REFERENCES

1. World Health Organization. Stroke fact sheet [Internet]. Geneva: WHO; 2021. [Available at: <https://www.emro.who.int/health-topics/stroke-cerebrovascular-accident/index.html>]
2. Katan M, Hannon N, Kelly J, et al. Stroke: A global perspective. *Lancet* 2012;379(9830):161–8.
3. Mora S, Joffe H, Whelton P, et al. Diabetes and stroke: Pathophysiological mechanisms and treatment strategies. *J Am Coll Cardiol* 2019;73(15):1847–60.
4. International Diabetes Federation. *IDF Diabetes Atlas*. 9ed. Brussels: International Diabetes Federation; 2019.
5. Friedman A, Kim H, Zhang L, et al. Infection as a risk factor for stroke: A systematic review. *Neurology* 2021;96(6):e625–35.
6. Gonzalez SA, Perez J, Martinez R, et al. The effect of diabetes and hypertension on stroke risk: A population-based study. *Diabetes Care* 2015;38(6):1112–8.
7. Wang Y, Zhao T, Li S, et al. Understanding right pontine infarcts: A review of clinical implications and prognosis. *Brain Sci* 2022;12(8):1040.
8. Ding J, Li Y, Zhang X, et al. Left ventricular hypertrophy and stroke risk in patients with hypertension: A systematic review and meta-analysis. *Stroke* 2017;48(2):352–8.

Author Contributions

Shashi Prakash – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically

for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

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Conflict of Interest

Author declares no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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