Insights into Ischemia: Unravelling Stroke Patterns in Diabetics - A Comprehensive Analysis

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Abstract: *Stroke, characterized by focal neurological signs of vascular origin lasting over 24 hours and confirmed by brain imaging, remains a significant global health concern, being the second leading cause of mortality and third in causing disability. This study aims to analyze the pattern of strokes in diabetic patients and correlate it with their glycemic status. We included patients with new-onset stroke and HbA1c levels above 6.5, as well as known diabetics on medication regardless of HbA1c levels. Excluded were patients with old strokes, other focal deficits, or normal CT scans. Among the 30 patients studied, the mean ages for various stroke types ranged from 53.67 to 64.24 years, with a male-to-female ratio of 2:1. The majority 90 had ischemic strokes, with cortical infarct being the most common type. Notably, HbA1c levels were significantly higher in patients with ischemic strokes, highlighting the correlation between high HbA1c and ischemic stroke incidence in diabetics.*

Keywords: Stroke, Diabetes, Ischemic stroke, HbA1c, Cortical infarct

1. Introduction

Stroke is characterized by focal neurological signs of vascular origin lasting over 24hours and confirmed by brain imaging, remains a significant global health concern, being the second leading cause of mortality and third in causing disability. This study aims to analyse the pattern of strokes in diabetic patients and correlate it with their glycaemic status. We included patients with new - onset stroke and HbA1c levels above 6.5, as well as known diabetics on medication regardless of HbA1c levels. Excluded were patients with old strokes, other focal deficits, or normal CT scans. Among the 30 patients studied, the mean ages for various stroke types ranged from 53.67 to 64.24 years, with a male - to - female ratio of 2: 1. The majority being ischemic strokes, with cortical infarct being the most common type. Notably, HbA1c levels were significantly higher in patients with ischemic strokes, highlighting the correlation between high HbA1c levels and ischemic stroke incidence in diabetics.

Keywords: Stroke, Diabetes, Ischemic stroke, HbA1c, Cortical Infarcts

Risk Factors

Non - Modifiable Risk Factors
- Age
- Gender
- Race
- Heredity

Modifiable Risk Factors
- Diabetes mellitus
- Heart disease (atrial fibrillation, carotid stenosis)
- Hypercoagulability
- Hyperlipidaemia
- Hypertension
- Obesity
- Smoking
- Heavy alcohol consumption
- Decreased physical activity

Aims and Objectives
To study the pattern of stroke occurring in diabetic patients and correlate it with glycaemic status.

Inclusion Criteria
- All patients with features of new - onset stroke with HbA1c level > 6.5%
- Known diabetic patients on medication (even with HbA1c level < 6.5%)

Exclusion Criteria
- Old known stroke patients
- Focal deficit induced by subdural hematoma, space - occupying lesion, aneurysmal rupture, or head injury
- Drug - induced focal deficit (e. g., anticoagulants)
- Patients with normal CT scans or those requiring MRI scans

2. Methodology

Patients with a history and clinical examination suggestive of stroke undergo a CT scan and HbA1c level assessment.

3. Results

- Mean age: Haemorrhagic stroke (53.67), brain stem infarct (55.8), cerebellar infarct (55.83), cortical infarct (64.24).
- Male to female ratio: 2: 1
- Out of 30 patients: 3 had haemorrhagic stroke (10%), 27 had ischemic stroke (90%).
- Cortical infarct (17%) is more common among ischemic strokes.

Mean HbA1c levels:
- Haemorrhagic stroke: 8.53
- Brain stem ischemic stroke: 7.53
- Cerebellar ischemic stroke: 6.22
- Cortical ischemic stroke: 9.11

Statistically significant variation in HbA1c values ($P \leq 0.05$).

Volume 13 Issue 8, August 2024
Fully Refereed | Open Access | Double Blind Peer Reviewed Journal
www.ijsr.net

Paper ID: SR24729090316   DOI: https://dx.doi.org/10.21275/SR24729090316   44
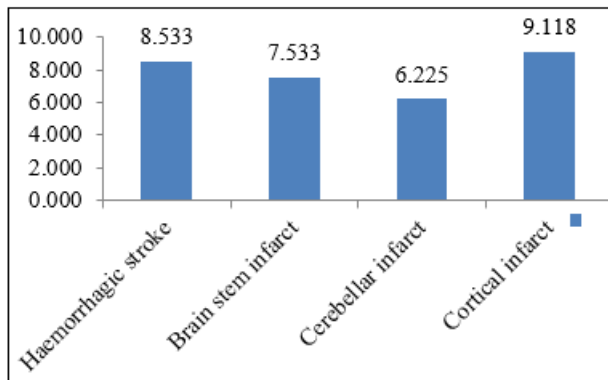
4. Discussion

The study indicates a lower mean age for haemorrhagic stroke compared to ischemic stroke. There is no significant age difference between haemorrhagic and ischemic stroke.

- Consistent with Zafar et al. study, ischemic stroke is more prevalent than haemorrhagic stroke in diabetics.
- Diabetics are more likely to have ischemic strokes and lacunar infarctions, which aligns with Ali et al. study.

5. Conclusion

Diabetic patients are more prone to ischemic strokes and lacunar infarctions, with a significant correlation between elevated HbA1c levels and the occurrence of ischemic strokes. This underscores the importance of monitoring and managing glycaemic levels in diabetic individuals to mitigate the risk of stroke.

References

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Volume 13 Issue 8, August 2024
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Paper ID: SR24729090316   DOI: https://dx.doi.org/10.21275/SR24729090316   45