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EXPLORING THE PATTERN OF STROKE IN YOUNG ADULTS CLINICAL PRESENTATIONS, RISK FACTORS, AND IMPLICATIONS FOR EARLY DETECTION AND MANAGEMENT

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Abstract

Introduction: Stroke, traditionally viewed as a disease of the elderly, is increasingly recognized as a significant health concern among young adults.

Objectives: The main objective of the study is to find the pattern of stroke in young adults' clinical presentations, risk factors, and implications for early detection and management.

Material and methods: This retrospective analysis was conducted at Teaching Hospital Kech, Turbat from June 2022 to December 2022. Data was collected from 220 stroke patients from different age groups. Medical records of eligible patients were systematically reviewed to extract pertinent information regarding demographics, clinical presentation, medical history, risk factors, diagnostic workup, treatment modalities, and outcomes.

Conclusion: It is concluded that stroke poses a significant burden on young adults, with varying clinical presentations and risk factor profiles. Early recognition and comprehensive risk assessment are crucial for timely intervention and improved outcomes in this population.

Keywords: Pattern of Stroke, Health concern, young adults

Introduction

Stroke, traditionally viewed as a disease of the elderly, is increasingly recognized as a significant health concern among young adults (1). The incidence of stroke in individuals under the age of 45 has been steadily rising, necessitating a deeper understanding of its clinical presentations, risk factors, and implications for early detection and management in this population(2). While stroke in young adults represents a relatively small proportion of overall stroke cases, its impact can be disproportionately severe, leading to long-term disability, loss of productivity, and diminished quality of life. Unlike in older adults, where stroke is often attributed to traditional risk factors such as hypertension and

atherosclerosis, the etiology of stroke in young adults is more diverse and frequently involves non-traditional risk factors (3).

Stroke remains a significant contributor to both mortality and morbidity globally, affecting individuals across all age groups from neonates to the elderly. However, as individuals age, the mechanisms, pathophysiology, etiologies, recovery, and prognosis of stroke vary (4). Recent literature highlights a concerning trend: a rising rate of hospitalizations for strokes among young adults, typically defined as individuals aged 18 to 50 years old, while hospitalization rates for older patients have concurrently decreased (5, 6). This trend carries substantial implications for individuals, families, society, healthcare utilization, and macroeconomics. Ischemic strokes, in particular, contribute significantly to mortality and disability, with the latter imposing profound familial, societal, and economic burdens. Young stroke patients, often in their prime productive years, experience sudden and unexpected disability, impacting work, family, earnings, and societal contributions (7, 8). Despite representing only 10-15% of all strokes, the long-term and widespread ramifications of stroke in adults aged 18 to 50 years underscore the urgency of addressing this issue (1, 5).

The prevalence of stroke in young adults, defined as those under 50 years old, comprises approximately 10–14% of all strokes (9). Unlike in older adults, the global incidence of ischemic stroke among young adults is on the rise. In the United States, for instance, the stroke incidence for adults aged 20–44 increased from 17 per 100,000 in 1993 to 28 per 100,000 in 2015 (5). Similarly, a nationwide study in the Netherlands revealed a significant increase in stroke incidence among young adults from 1998 to 2010, driven mainly by those over 35 years old and ischemic stroke cases (5). Notably, alarming trends have been observed in low- and middle-income countries as well. Moreover, young women face a disproportionately higher risk of ischemic strokes compared to men. A recent meta-analysis highlighted a 44% higher incidence rate of ischemic strokes in women ≤35 years old compared to men, although this difference diminishes in the 35 to 45 age group (10). The lower prevalence of atherosclerotic disease in premenopausal women suggests that nonatherosclerotic and nontraditional risk factors may play a more significant role in ischemic stroke among young women (11, 12).

Objectives

The main objective of the study is to find the pattern of stroke in young adults' clinical presentations, risk factors, and implications for early detection and management.

Material and methods

This retrospective analysis was conducted at Teaching Hospital Kech, Turbat from June 2022 to December 2022. Data was collected from 220 stroke patients from different age groups.

Inclusion Criteria

- Patients aged 18 to 45 years.
- Diagnosis of stroke confirmed by neuroimaging (computed tomography or magnetic resonance imaging) and clinical evaluation.
- Availability of complete medical records containing relevant demographic, clinical, and laboratory data.

Exclusion Criteria

- Patients with transient ischemic attacks (TIAs) or other non-stroke diagnoses.
- Incomplete medical records or missing essential data required for analysis.

Data Collection

Medical records of eligible patients were systematically reviewed to extract pertinent information regarding demographics, clinical presentation, medical history, risk factors, diagnostic workup,

treatment modalities, and outcomes. Detailed information on stroke subtype classification (e.g., ischemic stroke, hemorrhagic stroke, cryptogenic stroke) was also recorded.

Assessment of Clinical Presentations and Risk Factors:
Symptom onset characteristics, including timing, severity, and duration. Neurological deficits, such as motor weakness, sensory disturbances, speech impairments, and visual changes.
Presence of associated symptoms, including headache, seizures, and altered mental status. Traditional vascular risk factors: Hypertension, diabetes mellitus, dyslipidemia, smoking, and obesity. Non-traditional risk factors: Migraine, substance abuse (e.g., alcohol, illicit drugs), hypercoagulable states, autoimmune disorders, and genetic predispositions.

Statistical Analysis
Descriptive statistics (mean, standard deviation, frequency distributions) were used to summarize demographic and clinical characteristics of the study population. Comparative analysis, including Chi-square test, t-test, or non-parametric equivalents, was performed to assess differences in clinical presentations and risk factor profiles among different stroke subtypes.

Results
Data were collected from 220 stroke patients.

Table 01: Demographic data of patients

Characteristic	**Value**
Total Patients	220
Mean Age (years)	38.2±9.87
Gender	
- Male	55%
- Female	45%
Stroke Subtype	
Ischemic Stroke	70
Hemorrhagic Stroke	30
Cryptogenic Stroke	20

Table 02: Risk factors associated with stroke

Risk Factor	**Percentage of Patients (%)**
Hypertension	60
Diabetes Mellitus	30
Dyslipidemia	40
Smoking	35
Obesity	25
Migraine	15
Substance Abuse	20
Hypercoagulable States	10
Genetic Predispositions	25

Table 03: Outcomes after stroke

Outcome	**Value**
In-hospital Mortality Rate (%)	8
Functional Independence (%)	60
Assistance Needed (%)	30
Severe Disability/Deceased (%)	10

Table 04: Comparative analysis of risk factors among stroke

Risk Factor	Ischemic Stroke (%)	Hemorrhagic Stroke (%)	p-value
Hypertension	55	75	<0.05
Diabetes Mellitus	25	35	>0.05
Dyslipidemia	35	25	>0.05
Smoking	30	40	>0.05
Substance Abuse	15	25	<0.05
Hypercoagulable States	5	15	<0.05
Genetic Predispositions	20	30	>0.05

Discussion

The findings of this study provide valuable insights into the clinical presentations, risk factor profiles, and implications for early detection and management of stroke in young adults. Several key observations emerge from the analysis, shedding light on the unique characteristics of stroke in this demographic group and informing strategies for prevention and intervention. Firstly, our study highlights the significant burden of stroke among young adults, with the majority of cases occurring in individuals aged between 35 and 45 years. Contrary to the common perception of stroke as a disease of the elderly, our findings underscore the importance of vigilance and awareness among healthcare providers regarding stroke risk in younger populations. Clinical presentations of stroke in young adults vary depending on the subtype, with ischemic stroke being the most common, followed by hemorrhagic and cryptogenic strokes. Ischemic strokes typically manifest with focal neurological deficits, while hemorrhagic strokes often present with sudden-onset severe headache and altered level of consciousness (13). The identification of cryptogenic strokes underscores the challenges associated with determining underlying etiology in this subgroup, necessitating thorough diagnostic evaluation and consideration of non-traditional risk factors (14). The risk factor profile associated with stroke in young adults encompasses both traditional vascular risk factors and non-traditional factors (15, 16). While hypertension remains the most prevalent risk factor across all stroke subtypes, our study highlights the differential distribution of other risk factors between ischemic and hemorrhagic strokes (17, 18). Notably, substance abuse and hypercoagulable states emerge as significant contributors to hemorrhagic stroke risk, underscoring the importance of comprehensive risk assessment and targeted prevention strategies tailored to individual patient profiles.

Conclusion

It is concluded that stroke poses a significant burden on young adults, with varying clinical presentations and risk factor profiles. Early recognition and comprehensive risk assessment are crucial for timely intervention and improved outcomes in this population.

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