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EPIDEMIOLOGICAL REVIEW OF STROKE AMONG INDIAN WOMEN

Introduction

In recent times, stroke has emerged as a major public health problem in India [1]. According to western literature, women have a higher risk of stroke due to their longevity and are more likely to have poorer functional outcomes at 90 days and 1 year post stroke [2]. They are also more likely to be dependent in their activities of daily living and have lower self-reported quality-of-life scores [3]. Scant literature is available from India regarding the epidemiologic parameters of stroke among women. Furthermore, certain gender-specific stroke risk factors are unique to India. These are lower rates of female education, lack of stroke awareness, lower rate of smoking/alcohol use among Indian women, and lower prevalence of oral contraceptive pill (OCP) use. However, there is a higher preponderance of pregnancy-related and cardio-embolic strokes secondary to rheumatic heart disease among Indian women. Sociocultural issues might lead to a delay in seeking health care and thrombolysis, leading to poorer stroke outcomes among Indian women. Hence, this study was conducted to understand whether there is any paradigm shift in demographic parameters and other risk factors contributing to both ischemic and hemorrhagic stroke in Indian women over a 12-year period [10].

Goal

This study was conducted to summarize the literature data on the epidemiology changes in parameters of stroke among Indian women over the last decade.

Material and methods of research

The search of information was conducted through the research of scientific articles and systematic literature and the results were screened for the relevance review topic and also new articles were added based on the clinical knowledge of the author on the specific area. Statistical information was also obtained from clinical trials conducted on the area of review.

The results of the research and their discussion

We aimed to find any change in the demographic and risk factor profile among Indian male and female stroke patients over the past 12 years. The mean age of stroke onset has increased over the last decade, and this increase was significantly higher for females compared to males. Thus, Indian females are developing strokes at a later age compared to their male counterparts. This finding is in line with prior studies [4, 5]. Greater longevity of females and estrogen's protective effect on atherosclerosis might be plausible explanations. However, a recent retrospective cohort found that stroke incidence rate ratio was higher among young women (15–44 age group). This is in contrast to prior studies and may be due to selection bias, sampling only from an insured group of Caucasian patients, and higher incidence of stroke mimics among young females [6]. Some studies have reported higher age-adjusted stroke prevalence of stroke among Indian men compared to women [1, 3]. However, Banerjee et al [7] and Bhattacharya et al [8] reported conflicting results. This could be due to difference in mean age among surveys, variations in sex ratio, female literacy, and health awareness across states. Our study found no significant difference in the proportion of strokes occurring among females and males over the last decade.

This may be due to a small sample size from a single center and younger age of stroke onset. Our study found a greater proportion of hemorrhagic strokes in women (27.6 %) and an overall increase in hemorrhagic strokes (from 29 % in 2005 to 37 % in 2017). This figure is larger than the usual 15–20 % figure reported in the literature. This might be due to limited sample size, referral filter, and selection biases associated with hospital-based observational studies. Thus, larger prospective community-based studies would be required before drawing definite conclusions.

Table 1 – Comparison of demographic characteristics

Parameter	2005 Study, n = 267	2017 study, n = 150	P
Mean age + SD (Females)	53.21 ± 16.75	60.9 ± 16.9	0.002
Mean age + SD (Males)	55.47 ± 16.0	54.91 ± 16.5	0.812
Mean age + SD (overall)	54.24 ± 16.4	57.9 ± 16.7	0.031
Males n (%)	122 (45.7)	75 (50)	0.46
Females n (%)	145 (54.3)	75 (50)	0.46

Hypertension prevalence has been reported to be higher among female strokes compared to male strokes in some studies [9]. However, other studies have reported conflicting results [9]. Increase in the proportion of hypertensive stroke patients has been documented comparing two stroke registries at different time points from India. In our study, the proportion of female strokes with hypertension decreased from 58 % in 2005 to 56 % in 2017, while the proportion of male hypertensive strokes increased from 44.3 % (2005) to 50.7 % (2017). This decrease can be explained by the increasing health (stroke) awareness, greater accessibility to quality health care, and rising education levels among females in the last decade.

Table 2 – Comparison of stroke subtypes

Parameter	2005 Study, n = 267		2017 study, n = 150		P for males	P for females	P for overall
	Male, n (%) n = 122	Female, n (%) n = 145	Male, n (%) n = 75	Female, n (%) n = 75			
Ischemic stroke patients	85(69.7)	105(72.4)	47(62.7)	48(64)	0.39	0.26	0.12
Hemorrhagic stroke patients	37(30.3)	40(27.6)	28(37.3)	27(36)	0.39	0.26	0.12

Some studies have shown that diabetes mellitus is more prevalent among women with stroke while some have not [4]. The proportion of female diabetic strokes decreased from 38.7 % to 32 % over the last decade. Greater female health awareness and stronger government-based noncommunicable disease national programs over the last 5–10 years could be possible explanations.

Dyslipidemia prevalence among Indian strokes has been found to be 14.4 %. On comparing the 2005 results with 2016–2017, the proportion of female strokes with dyslipidemia decreased from 22.8 % to 6.7 %. Greater community health awareness, reduction in dietary saturated fats, and strong government noncommunicable disease programs might be possible reasons. However, the small numbers in the 2016–2017 study might be due to the small sample size and sampling from a predominantly urban population. Thus, larger prospective studies are required before drawing any conclusions [13].

Conclusion

In conclusion, this study showed that acute stroke (ischemic/hemorrhagic) among Indian women is occurring at a later age. Hemorrhagic stroke among women has increased over the

last decade. Furthermore, dyslipidemia among stroke patients has decreased over the past decade. However, hypertension and diabetes prevalence among stroke patients has not decreased significantly and requires urgent strengthening of public health measures.

LITERATURE

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YOUNG PEOPLE STORKE IN INDIA

Introduction

Stroke in young poses a major health problem. WHO defines stroke as an event caused by the interruption of the blood supply to the brain, usually because a blood vessel bursts or is blocked by a clot. This cuts off the supply of oxygen and nutrients, causing damage to the brain tissue [1]. The most common symptom of a stroke is sudden weakness or numbness of the face, arm, or leg, most often on one side of the body, occurring in 90 % of the strokes .A very severe stroke can cause sudden death.Globally, stroke is the third commonest cause of mortality [2] and the fourth leading cause of disease burden . It makes an important contribution to morbidity, mortality, and disability in developed as well as developing countries.risk of coronary artery disease (CAD) is higher in Indians especially in the young population [3]. Among younger patients, the epidemiological trends are highly concerning. Between 1990 and 2013, an increase in prevalence of cases, deaths was observed among younger adults aged 20–64 years. An absolute increase in stroke deaths by 36.7 % [95% UI, 26.3–48.5] among younger adults was observed in developing countries, compared to declining trends in developed countries. These numbers are alarming, considering that a large magnitude of stroke burden is borne by developing countries. Worldwide, around 2 million individuals in the age group of 18–50 years, experience stroke, and these numbers are continuing to rise.Stroke occurring in younger individuals presents specific implications. Apart from experiencing diverse predisposing factors for stroke, younger persons