

ORIGINAL RESEARCH

Lower Than National Rate Of Ischemic Stroke Thrombolysis In Andaman & Nicobar Islands – Lack Of Stroke & Thrombolysis Awareness Likely Cause? A prospective observational study

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ABSTRACT

Background: Ischemic stroke is a leading cause of morbidity and mortality worldwide, however, interventions to decrease the said morbidity and mortality are unequally availed by different populations. Therefore, an investigation into the clinical course of this disease in the population of Andaman & Nicobar Islands, which lie far from the Indian mainland, was well warranted. **Aim:** To examine the course of treatment and outcome of patients admitted with Ischemic Stroke to the Department of Medicine, GB Pant Hospital, Port Blair, Andaman & Nicobar Islands. **Methods:** The study is prospective observational in design, and follows patients admitted in the months of July to September 2022 during their period of admission. **Results:** Rate of IV thrombolysis was found to be significantly lower than the rate observed in mainland India ($p=0.00005$). This was primarily because very few patients, only 4.44% of the patients presented to the hospital within 4.5 hours of onset of symptoms. Secondly, patient age > 65 years was associated with greater mortality ($p=0.01714$), and a relative risk of mortality of 4.42 was found in patients aged >65 years, when compared to patients ≤ 65 years of age. **Conclusion:** Increasing awareness about stroke and stroke thrombolysis is likely to be the most effective tool for improving outcome of patients with Ischemic Stroke in Andaman & Nicobar Islands, as very few (4.44%) patients, despite of living in close vicinity of the hospital, presented to the hospital within 4.5 hours.

Keywords: ischemic stroke, thrombolysis, in-hospital mortality, Andaman and Nicobar Islands.

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INTRODUCTION

Stroke is a leading cause of death and disability worldwide [1]. It can broadly be classified into two subtypes – Ischemic and Haemorrhagic. For this study, we shall be limiting ourselves to examination of course of illness of patients suffering from Ischemic Stroke, admitted to the GB Pant Hospital, Port Blair, Andaman & Nicobar Islands.

Andaman & Nicobar Islands are a Union Territory of the Republic of India and are a home to a diverse population spread across its 38 inhabited islands. It is 1200 kilometres from the closest Indian coastline, from which it is separated by the Indian Ocean.

This study examines the outcomes of 45 adult ischemic stroke patients who were admitted to the GB Pant Hospital, located in Port Blair, the largest city of Andaman & Nicobar Islands.

AIM

The study follows patients diagnosed to have had an Ischemic stroke through their period of admission in the hospital. The outcomes of each admission – death, discharge, referral, or the patient leaving against medical advice, were noted.

METHODS AND MATERIALS

Ethical clearance from the institutional committee was obtained. The study, prospective observational in design, was conducted at Medicine Department, GB Pant Hospital, Port Blair, where patients were first identified based on the inclusion criteria, and were then explained the scope and aim of the study, and their consent was obtained. The patients’ data, such as date of onset of symptoms, sex, and age, was then recorded, and each case was followed until mortality, discharge or the patient leaving the hospital secondary to referral or against medical advice.

The study limits itself to patients who had onset of symptoms of stroke between 01/07/2022 and 31/08/2022.

The data was analysed using Microsoft Excel 2016, and Epi Info 7.5.2.0.

INCLUSION CRITERIA

1. Informed consent to participate in the study,
2. Radiological and clinical diagnosis of Ischemic Stroke,
3. Onset of between 01.07.2022 to 31.08.2022,

EXCLUSION CRITERIA

1. Consent not given, or not valid.

RESULTS AND DISCUSSION

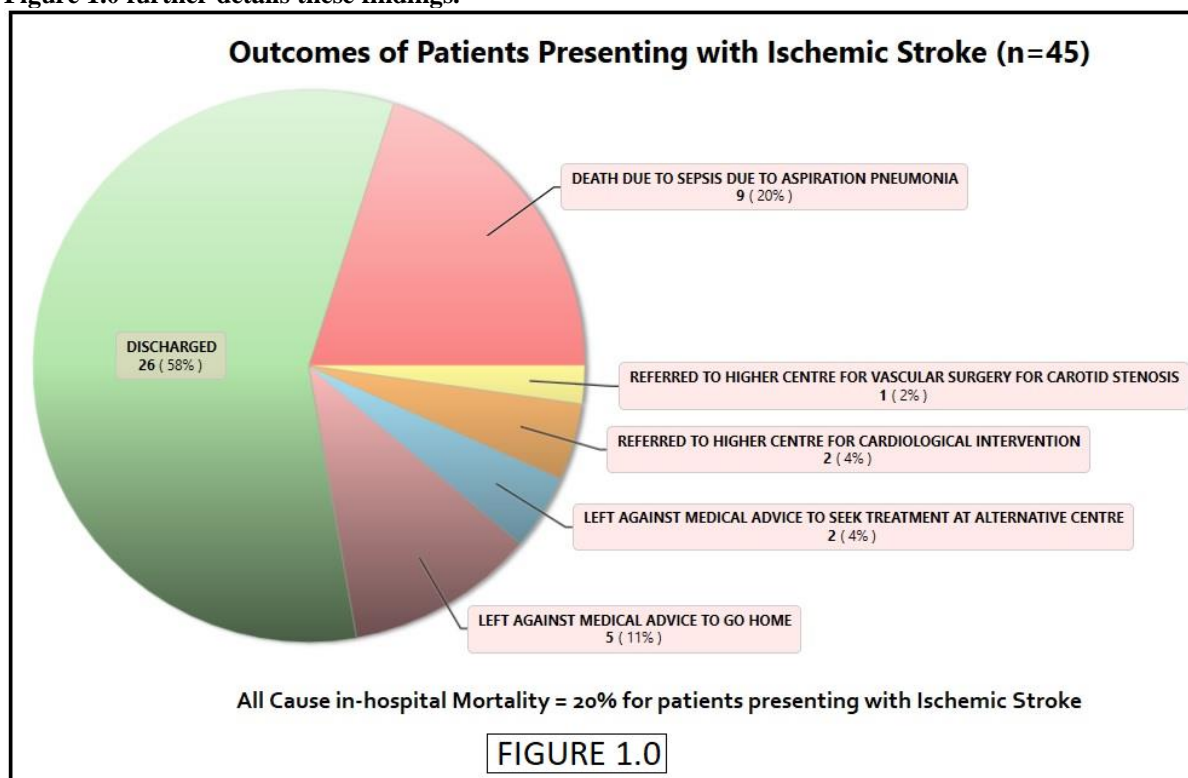
1. An overview of outcomes of admission with Ischemic Stroke

58% patients were discharged with advice for regular follow-up. 1 patient who was diagnosed to have Carotid Artery Stenosis and was referred to a higher centre for vascular surgery. 2 patients who presented with Acute Coronary Syndrome concomitant with symptoms of stroke, were referred to a higher centre with Interventional Cardiology facilities, due to the unavailability of the same at GB Pant Hospital during the period of study.

Two patients left against medical advice to seek care at the local Ayurveda centre, and a significant fraction of patients – 11% – left against medical advice to go home.

In-hospital mortality rate of patients admitted was 20%, with all fatalities being secondary sepsis secondary to aspiration pneumonia.

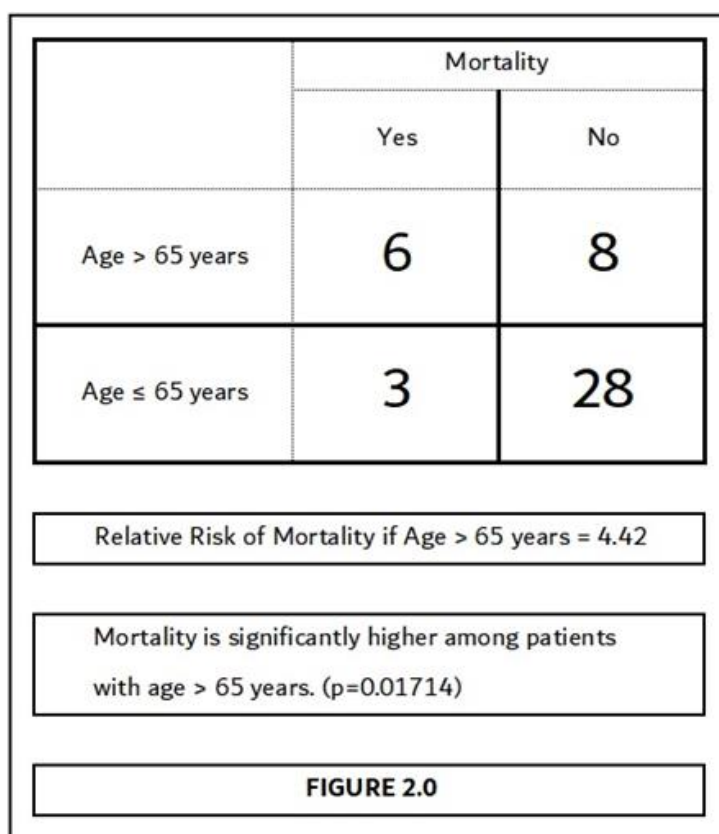
Figure 1.0 further details these findings.



2. Mortality in patients aged > 65 years vs. those aged ≤ 65 years

The authors found that patient aged > 65 years, had a relative risk of mortality of 4.42, compared with patients aged less than or equal to 65 years.

Mortality was found to be significantly higher in patients aged > 65 years. (p=0.01714)



3. Thrombolytic therapy

Only 1 patient (2.22%) out of 45, received IV thrombolysis. Most patients presented to the hospital much beyond the window period of thrombolysis of ischemic stroke.

This finding was compared to findings from other studies conducted in mainland India, which are enumerated in Table I.

Sr. No.	Investigators	Years Of Study	Institute	Place	% of Patients who received thrombolytic therapy
1	Shah et al ^[3]	2021 to 2022	Dr. Ram Manohar Lohia Hospital	New Delhi	20.63%
2	Panwar et al ^[4]	2016 to 2017	Kakatiya Medical College	Warangal, Telangana	4%
3	Gurav et al ^[2]	2011 to 2013	Ruby Clinic	Pune, Maharashtra	7.44%
4	Sylaja et al ^[5]	2020	Multicentric	Multicentric	13%
5	This study	2022	ANIIMS & GB Pant Hospital	Port Blair, A&N Islands	2.22%

Table I

The findings were analysed using Chi-Squared Calculation for Goodness of Fit. Fraction of patients who received IV thrombolysis was found to be significantly lower than the fraction observed in mainland India (p=0.00005). This was primarily because very few patients, only 2 out of 45 included in the study, presented to the hospital within 4.5 hours of onset of symptoms.

The authors concede that travel time from different islands of Andaman & Nicobar Islands to Port Blair may be a likely barrier to timely presentation, however, 34 patients of the total patient group included in the study were residents of Port Blair. If calculations are made using this value, still, only 5.88% patients presented within 4.5 hours of onset of

symptoms, and 2.9% underwent IV thrombolysis – this statistic is more concerning, rather than reassuring.

Substantial variations do exist between studies done in mainland India as well – for instance, Shah et al (2023) ^[3] report that 20.63% of Ischemic Stroke patients presenting to their hospital in New Delhi, the national capital of India, received thrombolysis, whereas Panwar et al (2017) ^[4] report than only 4% of patients presenting to their hospital in Warangal, a Tier 2 city^[2] received IV thrombolysis. Variation in awareness about stroke and stroke thrombolysis among populations of these areas may be likely cause for this observation.

Some studies in mainland India, such as Gurav et al (2015) [5] and Panwar et al (2017) [4], reported the cost of Tenecteplase or Alteplase to be a barrier to thrombolysis, as patients in mainland India need to procure the same with out-of-pocket expenditure. In GB Pant Hospital, this is supplied by the government to the patients free of cost, and therefore, ideally, higher rates of stroke thrombolysis should have been observed. This major advantage is nullified by the fact that a vast majority of patients present to the hospital beyond the period of hyperacute thrombolysis, and therefore, increasing Stroke and Thrombolysis awareness in the general population of Andaman & Nicobar Islands is sorely needed.

NOTABLE FINDINGS

Mortality was noted in 20% ischemic stroke patients, with aspiration pneumonia and sepsis being the primary cause of death.

Age > 65 years was associated with greater mortality ($p=0.01714$), and a relative risk of mortality of 4.42 was found in patients above the age of 65 years, when compared to patients ≤ 65 years of age.

Fraction of patients who received intravenous thrombolysis was found to be significantly lower than the fraction observed in mainland India ($p=0.00005$). This was primarily because very few patients, only 2 out of 45 included in the study, presented to the hospital within 4.5 hours of onset of symptoms.

CONCLUSION

The authors note that even though the mortality among patients admitted to GB Pant Hospital, Port Blair, was comparable to mortality in other tertiary care centres in India, they find it concerning that the fraction of patients who receive intravenous thrombolysis is significantly lower when compared to studies done in mainland India.

The authors hypothesize that significant improvement in rate of thrombolysis can be made by increasing the awareness about stroke and stroke thrombolysis in the general population of Andaman & Nicobar Islands. As the saying goes, *time is brain*, and our study shows that this proverb needs to be said louder, clearer, and more often among the population of Andaman and Nicobar Islands. Doctors can only treat patients when they present to the hospital in time, and modifications in the health seeking behaviours of the populace is the need of the hour.

AUTHOR CONTRIBUTION

Contributor P.P. has collected the patient data, as well as obtained informed consent, with assistance from contributor S.A. Data analysis was done by contributors J.J. and P.P. The manuscript was written by contributors J.J. and P.P. Contributors S.J. and R.J. supervised the data analysis and corrected the manuscript.

PLACE OF STUDY

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DISCLOSURE STATEMENT

There was no conflict of interest among the authors.

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