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REVIEW ARTICLES

Review of the Impact of Post-stroke Complications in the Various Stroke Care Scenarios for the Outcome of an Ischemic Stroke

Lokeshwari[1], Settepalli Jasmin Debora[2], Deepa Mukherji[3]

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ABSTRACT

One of the leading causes of death and disability in the world today is still stroke. Age and stroke severity are two examples of baseline, non-modifiable characteristics that are traditionally viewed as the most relevant when assessing the difficulty of forecasting stroke prognosis. But certain problems, like haemorrhagic changes or post-stroke infections, might arise after a stroke and have a negative impact on the patient's prognosis. For doctors to better individualize and enhance stroke therapy, an early prediction or detection of these conditions based on predictive models with clinical data may be helpful. Moreover, these predictive models may be more predictive if biological data—such as genetic polymorphisms or blood biomarkers—are added. In this study, we primarily discuss the various post-stroke consequences that affect the patient's short- and long-term outcomes at various times in the disease's natural history, as well as the clinical and biological data that may be helpful in predicting these difficulties.

KEYWORDS

• Stroke • Post-stroke complications • Care Scenario Patient Prognosis

INTRODUCTION

In industrialized nations, stroke incidence and death have been able to be greatly decreased because to the most recent developments in cardiovascular and stroke prevention and care.[1] However, the number of strokes worldwide has increased, with low- and middle-income nations bearing the lion's share of the burden due to linked fatalities and disability-adjusted life years (DALYs) lost. Three distinct but complimentary perspectives can be used to understand the prognosis of stroke: vital, neurological, and functional outcome.[2,3] Stroke

AUTHOR'S AFFILIATION:

[1] PG Student, Department of Critical Care Nursing, SGT University, Gurugram, Haryana, India.
[2] Prof. HOD, Department of Adult Health Nursing, SGT University, Gurugram, Haryana, India.
[3] Associate Professor, Department of Community Health Nursing, SGT University, Gurugram, Haryana, India.

CORRESPONDING AUTHOR:

Lokeshwari, PG Student, Department of Critical Care Nursing, SGT University, Gurugram, Haryana, India.
E-mail: lokeshwarisika@gmail.com

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is currently the fourth leading cause of death globally, with both genders equally impacted. Estimates of in-hospital mortality rates for ischemic stroke range from 11 to 15% and rise with age.[4] Three distinct but complimentary perspectives can be used to understand the prognosis of stroke: vital, neurological, and functional outcome.[5] Stroke is currently the fourth leading cause of death globally, with both genders equally impacted. Estimates of in-hospital mortality rates for ischemic stroke range from 11 to 15% and rise with age.[6]

Global neurological function monitoring is particularly valuable during the acute and subacute phases of stroke because it offers an objective indicator that notifies doctors when a patient's condition worsens. For this reason, the most commonly used scale is the National Institutes of Health Stroke Scale (NIHSS). In the context of an acute stroke, it is often assessed before and after revascularization treatments, and at least once every 24 hours.[7,8] Variations in the score of four points or more over time are generally interpreted as neurological improvement in cases where the score declines or deterioration in cases where the score increases.[9,10] According to estimates, 13.8% of patients treated with thrombolysis experienced neurological deterioration during the first 24 hours following their stroke, which is strongly indicative of a poor functional result .[11] It's also been shown to be a sign of underlying infarct progression, as well as harmful post-stroke events including hemorrhagic transformation or cerebral edema.[12]

METHODOLOGY

We concentrated on these post-stroke consequences in our analysis because they provide doctors and researchers a rare chance to change the striking prognosis of stroke patients. We broke down these events into three distinct phases and scenarios to help with comprehension: first, the hyperacute stroke setting, which includes the hours immediately following the event and is typically managed in stroke units and emergency rooms, where complications related to reperfusion therapies are the primary concern; second, the subacute setting, which includes inpatient hospitalization in stroke units and/or general neurology wards, where a wide range of neurological and systemic complications could be presented. Lastly, difficulties persist in the chronic phase following hospital discharge; nevertheless, stroke recurrence should also be avoided.

RESULT

The interaction between the patient's baseline parameters, such as age, gender, or the severity of the stroke, has a significant impact on the prognosis of strokes. It has been hypothesized that doctors' predictions of stroke outcomes, which are frequently based on their own knowledge and data from therapeutic trials, lead to bias because they overestimate the likelihood of positive outcomes. The quest for multivariate outcome predictors is crucial since stroke patients vary widely in both baseline characteristics and factors resulting from the stroke itself. These predictors of the outcome must to be precisely specified, standardized, and repeatable. Predictors should also be readily measured in day-to-day work and accessible when the forecast is meant to be employed. In addition to providing patients and their families with information, a trustworthy outcome prediction can enhance decision-making by estimating the risks and benefits of clinical interventions like potentially dangerous choices (like early discharge or refusal of admission to stroke units) or potentially dangerous treatments (like thrombolysis or hemicraniectomy). It is still up for dispute, though, how to incorporate this broad knowledge into decision-making procedures.

A number of predictive models for stroke patients' disability and mortality have been developed, assessed, and validated in recent years; the majority of these models have accuracy values of about 80%. Many of them involve age and the severity of the stroke as common predictor variables, albeit none has been widely acknowledged for its applicability in clinical practice as of yet.

DISCUSSION

However, the functional status is arguably the most significant factor in predicting the outcome of a stroke and the primary end-point for stroke clinical studies. According to data from the World Health Organization, 20% of stroke survivors will need institutional care, and around half of them will have some kind of physical or cognitive impairment. Stroke

accounts for 6.3% of all DALYs in Europe, making it the second most common cause of disability. The clinical end-point for stroke trials is the modified Ranking Scale (mRS), a 7-point rating system for one's ability to carry out fundamental everyday activities. Typically, the mRS score is classified as either < 2 or > 2 points, indicating a good or bad functional outcome.[13,14,17]

CONCLUSION

Since these predictive models describe a baseline, non-modifiable state, further examination of them is outside the purview of this review article. Acute therapy-related complications (resistance to recanalization, reocclusions, hemorrhagic transformation), edema or elevated intracranial pressure, or post-stroke infections are some of the factors that can affect the outcome of a stroke, though. Current stroke recommendations may be modified by decision-making processes if physicians were able to anticipate these problems. In fact, by preventing potentially fatal consequences, prophylaxis or early treatment of these issues may lead to noticeably better results.

The clinical data that could assist doctors in early detection or prediction of each of the problems was given special consideration

Snippets of sections

Complications following a stroke in the acute context

In light of the recent publication of phase III randomized trials demonstrating the efficacy of endovascular therapies in treating patients with intracranial occlusions, intravenous thrombolysis with recombinant tissue plasminogen activator (tPA) continues to be the only FDA-approved medication for the treatment of acute strokes. Revascularization is successful, but its usage is limited by a narrow window of time and a long list of contraindications.[15]

Elevated intracranial pressure and a middle cerebral artery infarct that is malignant

Following the acute phase, the ischemia cascade induces various processes, including the production of oxidative stress, inflammation, and tissue remodeling activation. These processes impact the neurovascular unit on both a structural and functional level.[16] These processes cause the blood-brain barrier to become less cohesive, which increases the barrier's permeability and permits fluid leakage, which causes vasogenic edema.[17]

Chronic phase post-stroke complications

Regarding the ultimate result, there are many distinct ways in which the processes of care for stroke patients following their release from medical facilities can be distinguished. Patients who are able to do daily tasks independently represent one extremity of the spectrum, where therapy efforts should focus on vascular risk factor management and lifestyle adjustments to prevent stroke recurrence.[18]

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