Stroke-Associated Pneumonia: Management Issues

Rajesh Verma[1]

[1]Department of Neurology, King George's Medical University, Lucknow, Uttar Pradesh, India

Address for correspondence Rajesh Verma, DM, DNB, Department of Neurology, King George's Medical University, Lucknow 226003, Uttar Pradesh, India (e-mail: drrajeshverma32@yahoo.com).

Stroke is a widely prevalent disorder causing significant morbidity and mortality. In our country, it usually occurs in epidemic proportions. The stroke is the second leading cause of mortality throughout the world. The community-based study during 2003 to 2004 revealed the prevalence rate of 4.72/1000, 95% confidence interval (95% CI: 4.15–5.34). Various studies in India showed annual incidence rates of stroke, 107/100,000/year which is higher than the United States.[1]

The risk factors for stroke are hypertension, diabetes, metabolic syndrome, obesity, dyslipidemia, smoking, tobacco intake, atrial fibrillation, lack of fruits and green vegetables in diet, and sedentary lifestyle. These risk factors are commonly observed in Indian population.. Stroke management comprises control of risk factors, acute stroke care, and long-term rehabilitation in stroke survivors.[2]

In the recent past, advanced imaging techniques and innovative therapeutics have revolutionized the management of stroke. This changes the nihilistic attitude to well-planned therapy of stroke with excellent clinical outcome. There is an emergent need for protocol-based management of stroke. The stroke protocol should be uniformly implemented at all nook and corners of India. The public and private sector should join their hands for this endeavor.[3]

Different types of medical complications occur during hospitalization of stroke patients. These medical complications lead to prolonged hospital stay, increased cost of care, and high morbidity and mortality in poststroke patients. The various medical complications in poststroke patients reported in the literature are infections mainly pneumonia, urinary tract infections, cardiac dysfunction, dysphagia, hypertension, hyperthermia, deep venous thrombosis, pulmonary embolism, bedsores, falls, and poststroke depression. These acute and subacute complications are often preventable, and timely addressing these problems will result in good clinical outcome.[4]

Stroke-related pneumonia occurred in around one-third of acute stroke patients and is responsible for enhanced three-fold mortality within a month. It mainly manifested within 2 to 7 days after onset of illness. Stroke-associated pneumonia (SAP) leads to prolonged hospitalization, increased morbidity, delayed recovery, and difficulty in executing rehabilitative procedures. In majority of SAP, the causative factor was hospital-acquired infection. The dysphagia along with aspiration is a significant risk factor for SAP in stroke patients.[5] The bedside screening and early detection of dysphagia significantly reduced the incidence of pneumonia in stroke patients.[6]

The important risk factors responsible for SAP, as described in the literature, are elderly age, atrial fibrillation, impaired sensorium, bad oral hygiene, brainstem stroke, poststroke disability, dysphagia, aspiration, severe stroke, and congestive heart failure.[7] Even the acid-suppressive medications, particularly proton-pump inhibitors, have association with occurrence of pneumonia in hospitalized patients of stroke. These drugs are given to prevent gastritis and stress ulcers in acute stroke care.[8] The prophylactic antibiotic therapy in stroke to prevent pneumonia is controversial and literature showed inconsistent results. Although the infection, particularly urinary tract infection, has been reduced, the long-term outcome was not affected by prophylactic antibiotic therapy. The clinicians are advised for judicious use of antibiotic therapy in clinical settings of stroke.[9]

Various validated scales have been applied to predict pneumonia in acute stroke patients. Acute Ischemic Stroke-Associated Pneumonia Scale, integer-based pneumonia score, and ACCD4 are well-validated and reliable scales. The simplified clinical scale to predict pneumonia in stroke patients is A^2DS^2 score which includes age, atrial fibrillation, dysphagia, gender, and stroke severity based on the National Institutes of Health Stroke Scale.[10]

A study was conducted among hospitalized acute stroke patients of large sample size. Variables such as age ≥75 years, impaired swallowing, dysarthria, and congestive heart failure were found to be risk factors for SAP. The author proposed a simple clinical scale ACDD4 score to predict pneumonia in acute stoke patients. This study was done in nonventilated and nonintubated patients.[11]

Vyas et al did an elegant study, pertaining to predictive clinical scale for SAP in Indian patients. This study was conducted in 250 patients of stroke, both ischemic and hemorrhagic in nature. The pneumonia occurred in 46 patients. The authors applied the A^2DS^2 score (age, atrial fibrillation, dysphagia, sex, and stroke severity) in admitted stroke patients. The scores were divided into two parts, high (5–10) and low (0–4) among hospitalized stroke patients. Majority of

patients developed pneumonia with high scores which was statistically significant. The authors concluded that A^2DS^2 score had high sensitivity of 82% in predicting SAP and are promising tool in stroke sufferers in acute phase. It can timely detect and help in preventing SAP.[12]

The stroke is quite common with substantial morbidity and mortality. It requires holistic care, including primary prevention, control of risk factors, timely administration of specific therapy, meticulous management of medical complications, and long-term rehabilitation for stroke survivors. The clinicians are advised to apply pneumonia scales in acute stroke patients, so as to detect pneumonia at the earliest. The timely management of pneumonia results in better clinical outcome.

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Conflict of Interest
None declared.

References

1 Das SK, Banerjee TK, Biswas A, et al. A prospective community-based study of stroke in Kolkata, India. Stroke 2007; 38(3):906–910

2 Lipska K, Sylaja PN, Sarma PS, et al. Risk factors for acute ischaemic stroke in young adults in South India. J Neurol Neurosurg Psychiatry 2007;78(9):959–963

3 Mishra NK, Khadilkar SV. Stroke program for India. Ann Indian Acad Neurol 2010;13(1):28–32

4 Indredavik B, Rohweder G, Naalsund E, Lydersen S. Medical complications in a comprehensive stroke unit and an early supported discharge service. Stroke 2008;39(2):414–420

5 Katzan IL, Cebul RD, Husak SH, Dawson NV, Baker DW. The effect of pneumonia on mortality among patients hospitalized for acute stroke. Neurology 2003;60(4):620–625

6 Dennis MS, Lewis SC, Warlow C; FOOD Trial Collaboration. Effect of timing and method of enteral tube feeding for dysphagic stroke patients (FOOD): a multicentre randomised controlled trial. Lancet 2005;365(9461):764–772

7 Sellars C, Bowie L, Bagg J, et al. Risk factors for chest infection in acute stroke: a prospective cohort study. Stroke 2007;38(8):2284–2291

8 Herzig SJ, Doughty C, Lahoti S, et al. Acid-suppressive medication use in acute stroke and hospital-acquired pneumonia. Ann Neurol 2014;76(5):712–718

9 Hetze S, Engel O, Römer C, et al. Superiority of preventive antibiotic treatment compared with standard treatment of poststroke pneumonia in experimental stroke: a bed to bench approach. J Cereb Blood Flow Metab 2013;33(6):846–854

10 Hoffmann S, Malzahn U, Harms H, et al. Berlin Stroke Register and the Stroke Register of Northwest Germany. Development of a clinical score (A2DS2) to predict pneumonia in acute ischemic stroke. Stroke 2012;43(10):2617–2623

11 Kumar S, Marchina S, Massaro J, et al. ACDD^4 score: A simple tool for assessing risk of pneumonia after stroke. J Neurol Sci 2017;372:399–402

12 Vyas L, Kulshreshtha D, Maurya P, Singh A, Qavi A. Thacker A. A^2DS^2 score to predict the risk of stroke-associated pneumonia in acute stroke: an Indian perspective. J Neurosci Rural Pract 2019;10(3):465–471