

STROKE ASSOCIATED PNEUMONIA IN STROKE PATIENTS

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ABSTRACT

Objective: The objective of the study was to: Determine the frequency of stroke associated pneumonia in stroke patients. **Study Design:** Descriptive case series. **Setting:** This study was carried out in Department of Nishtar Hospital Multan. **Methodology:** A total of 285 cases fulfilling the inclusion/exclusion criteria recruited from Department of Medicine, Nishtar Hospital Multan were enrolled in the study after taking an informed consent from the patients to include their data in the study with the assurance of confidentiality of their record. History and complete examination of the patients were done. All diagnosed cases of stroke were followed till 30 days (either in medical ward/outdoor) for stroke associated pneumonia, with positive finding in chest X-ray and culture of tracheal aspiration (as per operational definition) by the researcher herself. **Results:** In our study, out of 100 cases 21.05%(n=60) were between 30-50 years of age while 78.95%(n=225) were between 51-70 years of age, mean \pm sd was calculated as 56.86 \pm 6.81 years, 51.58%(n=147) were male and 48.42%(n=138) were females. Frequency of stroke associated pneumonia in patients with stroke was recorded in 17.89% (n=51). **Conclusion:** We concluded that the frequency of stroke associated pneumonia is quite high among stroke patients. However, these cases should be diagnosed early managed accordingly.

KEYWORDS: Stroke, stroke associated pneumonia, frequency.

INTRODUCTION

Stroke is a major cause of morbidity and mortality.^[1-2] a recent community-based survey suggested an estimated 21.8% prevalence of stroke and/or Transient Ischemic Attack in Pakistan.^[3] Stroke-specific fatality recorded between 7 to 20% in multiple studies conducted at Pakistan. Approximately 63% of all stroke patients develop complications and upto 89% are dependent for activities of daily living.^[4] The risk factors for stroke are similar to the Western population and mostly comprise of hypertension, smoking, dyslipidemia, cardiac disease and Diabetes.^[4-5]

Medical and neurological complications, including pneumonia, are found to be major causes of death after stroke.^[6] The incidence of stroke-related pneumonia appears to be significantly higher in those cases having acute ischemic stroke admitted for treatment to a neurologic ICU and those who require nasogastric tube feeding (21% and 44%, respectively).^[7] Pneumonia is the most common cause of fever within the first 48 hours of acute stroke, and it is the most common medical complication two to four weeks after a supratentorial ischemic infarction.^[7]

This study was planned with the view that in our population recent findings are not recorded and no

research data is available, the recorded magnitude in previous literature is not consistent which needs another recent study to record and compare with other studies so that the recent research based statistics may be determined to for this issue.

METHODOLOGY

A total of 100 diagnosed stroke cases between 30-70 years of age of either gender were included in the study. We excluded those cases with a history of pneumonia. We performed a complete examination and history of the patients was obtained. All diagnosed cases of stroke were followed till 30 days (either in medical ward/outdoor) for stroke associated pneumonia, with positive finding in chest X-ray and culture of tracheal aspiration.

RESULTS

A total of 100 cases fulfilling the inclusion/exclusion criteria were enrolled to frequency of stroke associated pneumonia in stroke patients.

Patients were distributed according to age, which shows that 21.05%(n=60) were between 30-50 years of age while 78.95%(n=225) were between 51-70 years of age, mean \pm SD was calculated as 56.86 \pm 6.81 years. (Table No. 1) Patients were distributed according to gender, it shows that 51.58%(n=147) were male and

48.42%(n=138) were females. (Table No. 2) Frequency of stroke associated pneumonia in patients with stroke

was recorded in 17.89%(n=51) while 82.11%(n=234) had no findings of the morbidity. (Table No. 3).

Table No. 1: Age Distribution (n=100).

Age(in years)	No. of patients			%
30-50	21			21
51-70	79			79
Total	100			100
Mean±SD		54.16±7.22		

Table No. 2: Age Distribution (n=100).

Gender	No. of patients	%
Male	51	51
Female	49	49
Total	100	100

Table No. 3: Frequency of Stroke Associated Pneumonia in Stroke Patients (n=100).

Pneumonia	No. of patients	%
Yes	18	18
No	82	82
Total	100	100

DISCUSSION

Stroke-associated pneumonia (SAP) is associated with the morbidity, mortality and an elevated medical cost in patients suffering with acute ischemic stroke. Previously, the rate and prognosis of stroke-associated pneumonia has not been ruled out thoroughly in our country. However, we planned this study to record the rate of SAP.

We recorded mean age as 54.16 ± 7.22 years, 51%(n=51) male and 49%(n=49) females, frequency of stroke associated pneumonia in patients with stroke was recorded in 17.89%(n=51). We compared our results with Chamorro A et al who recorded pneumonia may occur in 7-22% of stroke patients.^[8] Another study by Finlayson O^[9] recorded that Stroke associated pneumonia was observed in 587 patients (7.1%).

Another recent study^[10] recorded the incidences of SAP in the following settings NICUs 4.156.6%, MICUs 17-50%, stroke units 3.9-44%, mixed studies 3.9-23.8% and rehabilitation 3.211%. However, or findings are closely in agreement with the above studies.

The rate of SAP among the most of the studies based on NICU ranged between 9.5% to 56.6%^[11,12] except a study where it was recorded as 4.1%.^[12] However, this study included all types of neurovascular cases in addition to stroke patients and younger in age. The rate was higher among febrile cases (40.2-70.8%)^[13] showing the importance of SAP as a risk factor of fever after stroke. The MICU studies reveal these findings in 17 and

50%^[11,13] and seemed to be similar to the studies conducted at NICU. Various SAP studies are performed in stroke units or in mixed acute settings.

The rate of SAP among most of the studies performed exclusively in stroke units varies between 3.9 and 12%^[14,15,11,13] except a study where it was recorded in 44% of the cases.^[16] It may reflect biasness in selection as enrolled in the study had nasogastric tube feeding, the rate of mechanical ventilation was higher as (18%) and the severity level of stroke was more severe. Some other trials performed in mixed acute settings recorded an incidence between 3.9% to 23.8%, whereas the incidence among selected rehabilitation trials ranging from 3.2 to 11% cases.^[17,18]

It is really hard to compare these studies with the fact that they are highly heterogeneous; particularly those studies conducted in critical care settings. Most of the ICU studies enrolled intracerebral or subarachnoid hemorrhage in addition to AIS.^[11-13] Few of them included AIS alone, while the majority of them were performed in acute general floors or stroke units.^[11,14]

There may also be differences in definition of SAP,^[11] the incidence of mechanically ventilated cases may also vary.^[16] The rate of SAP was recorded to be similar in MICUs and NICUs and higher than those at the stroke units or acute general floors.

In summary, we are of the view that the frequency of stroke associated pneumonia in stroke patients revealed

in our study is comparable with other studies. However, some other studies are required to validate our findings.

CONCLUSION

We concluded that the frequency of stroke associated pneumonia is quite high among stroke patients. However, these cases should be diagnosed early managed accordingly.

REFERENCES

1. Vermeil FH, Schulte op Reimer WJ, de Man P. Stroke-associated infection is an independent risk factor for poor outcome after acute ischemic stroke: data from the Netherlands Stroke Survey. *Cerebrovascular Dis.*, 2009; 27: 465-71.
2. Roger VL, Go AS, Lloyd-Jones DM. Heart disease and stroke statistics - 2012 update: a report from the American Heart Association. *Circulation*, 2012; 125: e2-e220.
3. Kamal AK, It rat A, Mumtaz M, Khan M, Rasheed A, Ali A. The burden of stroke and transient ischemic attack in Pakistan: a community-based prevalence study. *BMC Neural*, 2009; 9: 58.
4. Farooq MU, Majid A, Reeves MJ, Brubeck GL. The epidemiology of stroke in Pakistan: past, present, and future. *Int J Stroke*, 2009; 4: 381-9.
5. Tajo F, Zaid R, Syeda UE, Mumtaz M, Ahmed S, Kamal AK. Risk factors of stroke in Pakistan: a dedicated stroke clinic experience. *Can J Neural Sci.*, 2010; 37: 252-7.
6. Koneke HC, Bells W, Barreled D. Factors influencing in-hospital mortality and morbidity in patients treated on a stroke unit. *Neurology*, 2011; 77: 965-972.
7. Bingaman A, Andersen G, Handbag HH. In-hospital medical complications, length of stay, and mortality among stroke unit patients. *Stroke*, 2011; 42: 3214.
8. Chamorro A, Urara X, Planes AM. Infection after acute ischemic stroke: a manifestation of brain-induced immunodepression. *Stroke*, 2007; 38: 1097-103.
9. Finlayson O, Kapral M, Hall R, Alani E, Selene D, Saposnik G. Risk factors, inpatient care, and outcomes of pneumonia after ischemic stroke. *Neurology*, 2011; 77(14): 1338-45.
10. Hanna Y, Hanna B, Rao CP, Suarez JI, Berthed EM. Stroke-associated pneumonia: major advances and obstacles. *Cerebrovascular Dis.*, 2013; 35(5): 430-43.
11. Hiker R, Potter C, Findeisen N. Nosocomial pneumonia after acute stroke: implications for neurological intensive care medicine. *Stroke*, 2003; 34: 975-81.
12. Josephson SA, Moher AM, Gropper MA, Nichols AD, Smith WS. Ventilator associated pneumonia in a neurologic intensive care unit does not lead to increased mortality. *Neuro Crit Care*, 2010; 12: 155-58.
13. Yan F, Zhang D, Xu H, Goo H. Risk factors for fever in critically ill patients with acute new onset stroke. *Neural Res.*, 2008; 30: 394-99.
14. Vermeil FH, Schulte op Reimer WJ, de Man P. Stroke-associated infection is an independent risk factor for poor outcome after acute ischemic stroke: data from the Netherlands Stroke Survey. *Cerebrovascular Dis.*, 2009; 27: 465-71.
15. Roger VL, Go AS, Lloyd-Jones DM. Heart disease and stroke statistics – 2012 update: a report from the American Heart Association. *Circulation*, 2012; 125: e2-e220.
16. Yan F, Zhang D, Xu H, Goo H. Risk factors for fever in critically ill patients with acute new onset stroke. *Neural Res.*, 2008; 30: 394-99.
17. Lipson DM, Shanghai H, Foley NC, Bhogal S, Pohani G, Teasell RW. Recovery from stroke: differences between subtypes. *Int J Retail Res.*, 2005; 28: 303-08.
18. Teasel R, Foley N, Doherty T, Fine stone H. Clinical characteristics of patients with brainstem strokes admitted to a rehabilitation unit. *Arch Phis Med Retail*, 2002; 83: 1013-16.