

Frequency of Stroke Associated Pneumonia in Stroke Patients

Muhammad Adrees, Subhanullah, Sahar Rasool, Nosheen Ahmad

ABSTRACT

Introduction: Stroke cases are complicated with infection and most of the cases are associated with poor prognosis, more length of hospital stay and financial burden. Varying terminologies (e.g., stroke-associated pneumonia [SAP], chest infection, post-stroke pneumonia and aspiration pneumonia) are used to address this issue. Early diagnosis of pneumonia in stroke sufferers is challenging for medical specialists. **Objective:** To determine the frequency of stroke associated pneumonia in stroke patients. **Study design:** Cross sectional survey. **Setting:** Department of Medicine, Allied Hospital, Faisalabad. **Duration of study:** 01-02-2016 to 31-07-2016. **Sample Size:** A total of 100 diagnosed stroke cases. **Sampling Technique:** Non-probability purposive sampling. **Data collection procedure:** 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:** 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±sd was calculated as 56.86±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) while 82.11% (n=234) had no findings of the morbidity. **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: Acute ischemic stroke, stroke associated pneumonia (SAP), association

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Submitted for Publication: 10-04-2017

Accepted for Publication: 14-05-2017

Article Citation: Adrees M, Subhanullah, Rasool S, Ahmad N. Frequency of Stroke Associated Pneumonia in Stroke Patients. APMC 2017;11(2):154-157.

INTRODUCTION

Stroke is a major cause of morbidity and mortality.¹⁻² A recent survey estimated 21.8% cases with stroke and/or Transient Ischemic Attack in Pakistan.³ Stroke-specific fatality ranges 7 to 20% in various studies in our country. Approximately 60% of stroke sufferers are at higher risk of complications and a significant proportion i.e. 89% are not able to perform routine activities independently. The causes of stroke in our population are similar to other Western countries where majority of the cases present with diabetes mellitus, cardiac disease, smoking, hypertension and dyslipidemia.⁴⁻⁵ Medical and neurological complications, including pneumonia, are found to be major causes of death after stroke.⁶

The rate of stroke-related pneumonia is higher among cases with acute ischemic stroke and under treatment in intensive care unit of neurology i.e. 21% and 44% with nasogastric tube feeding cases.⁷ Pneumonia is a predominant cause of fever during first 48 hours of acute stroke, it is also recorded in majority of the cases with common medical complications within 30 days of 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.

Objective: To determine the frequency of stroke associated pneumonia in stroke patients.

METHODOLOGY

Study design: Cross sectional survey.

Setting: Department of Medicine, Allied Hospital, Faisalabad.

Duration of study: 01-02-2016 to 31-07-2016

Sample Size: The calculated sample size is 100 cases, with 5% margin of error, 95% confidence level taking percentage of stroke associated pneumonia in stroke cases i.e. 7%.

Sampling Technique: Non-probability purposive sampling

Inclusion criteria:

- Age between 30-70 years of either gender
- Diagnosed cases of stroke

Exclusion criteria:

- All those cases with history of pneumonia

Data collection procedure: 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. 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.

Data analysis:

All the data was analyzed through statistical package of social sciences where quantitative variables were analyzed by calculating mean±sd while qualitative variable like gender and presence/absence of stroke associated pneumonia were calculated through frequency and percentage.

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±sd was calculated as 56.86±6.81 years. (Table No. 1)

Table 1: Age distribution (n=100)

Age(in years)	Frequency	%
30-50	21	21
51-70	79	79
Total	100	100

Patients were distributed according to gender, it shows that 51.58 % (n=147) were male and 48.42% (n=138) were females. (Figure)

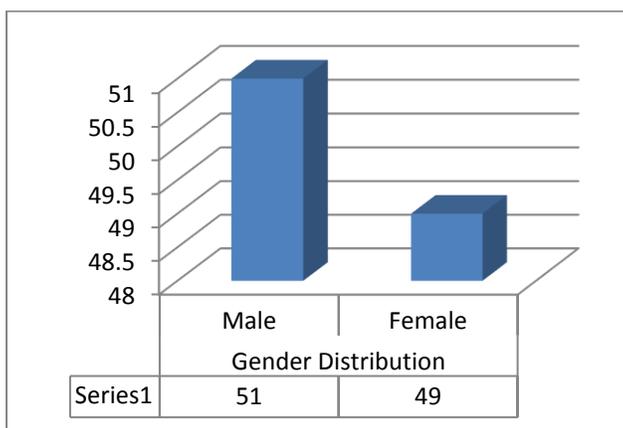


Figure 1: Gender distribution

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. 2)

Table 2: 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 O⁹ recorded that Stroke-associated pneumonia was observed in 587 patients (7.1%).

Another recent study¹⁰ recorded 4.1-56.6% of stroke associated pneumonia in cases admitted in NICUs, while 17-50% among MICUs, 3.9-23.8% in mixed studies, 3.9-44% among stroke units and 3.2-11% in rehabilitation cases. However, our 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, they enrolled 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 for 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.

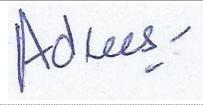
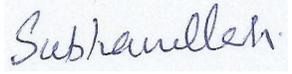
CONCLUSION

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

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