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Research Article

**TO CONCLUDE THE OCCURRENCE RATE OF STROKE  
ASSOCIATED PNEUMONIA (SAP) IN STROKE PATIENTS: A  
CROSS SECTIONAL STUDY**

Dr. Muzna Butt, Dr. Nabila Younas, Dr. Safa Khalil  
House Officers, Services Hospital Lahore

**Article Received:** August 2020**Accepted:** September 2020**Published:** October 2020**Abstract:**

**Objective:** The aim of our study was to conclude the occurrence of stroke associated pneumonia (SAP) in stroke patients.

**Study design:** Cross sectional study.

**Place and Duration of study:** We conducted this study at Services Hospital Lahore for the duration of six months starting from 1<sup>st</sup> June, 2019 to 30<sup>th</sup> May, 2020.

**Methodology:** We used non-probability purposive selection method and selected a total of 100 cases which were diagnosed stroke cases. All detected cases of stroke were followed till 30 days either in medical ward or outdoor for stroke associated pneumonia. We performed a complete examination and history of the patients was obtained. with positive finding in chest X-ray and culture of tracheal aspiration. All the data was analyzed through statistical package of social sciences (SPSS 20) 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:** Patients were distributed according to age, which shows that 21.05%age(n=60) were between 30-50 years of age while 78.95%age(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 %age(n=51) while 82.11 %age(n=234) had no findings of the morbidity.

**Conclusion:** We determined that the frequency of stroke associated pneumonia is quite high amongst stroke patients. However, these cases should be diagnosed early and should be managed accordingly.

**Keywords:** Stroke associated pneumonia (SAP), Association, Acute Ischemic Stroke.

**Corresponding author:****Dr. Muzna Butt,**

House Officers, Services Hospital Lahore

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**INTRODUCTION:**

Stroke cases are complicated with infection and most of the cases are associated with poor prognosis, more length of hospital stays 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.

Stroke is a most important reason of sickness and death [1]. A recent survey estimated 21.8% cases with stroke and/or Transient Ischemic Attack in Pakistan [2]. Stroke-specific casualty ranges 7 to 20% in various studies in our country. Almost 60% of stroke victims are at higher risk of difficulties 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 [3,4]. Medical and neurological complications, including pneumonia, are found to be major causes of death after stroke [5].

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 [6]. 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 [6].

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 cross sectional survey at Services Hospital Lahore for the duration of six months starting from 1<sup>st</sup> June, 2019 to 30<sup>th</sup> May, 2020. We 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%.

We included all those patients who were having age between 30-70 years of either gender and were diagnosed as positive stroke cases. All those cases were excluded who were having history of pneumonia. All diagnosed cases of stroke were followed till 30 days (either in medical ward/outdoor) for stroke associated 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.

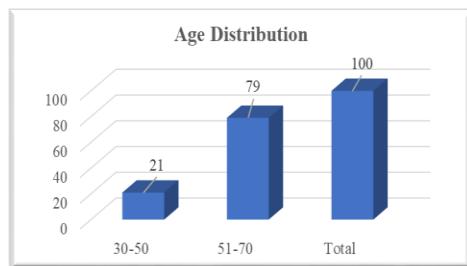
All the data was analyzed through statistical package of social sciences (SPSS 20) where quantitative variables were analyzed by calculating Mean $\pm$ SD while qualitative variable like gender and presence/absence of stroke associated pneumonia were calculated through frequency and percentage.

**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 $\pm$ SD was calculated as 56.86 $\pm$ 6.81 years. (Table No. 1)

**Table No 01: Age distribution (n=100)**

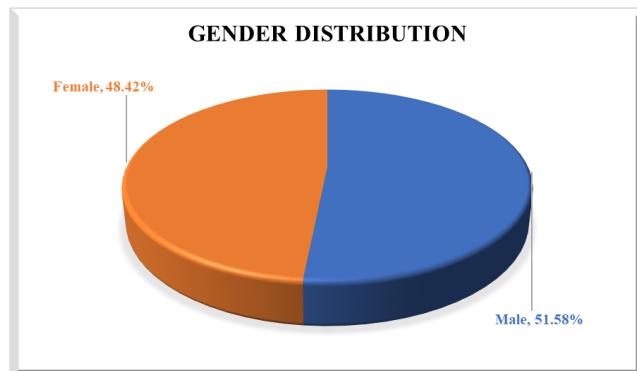
Age in years	Frequency	Percentage
30-50	21	21
51-70	79	79
Total	100	100



Patients were distributed according to gender; it shows that 51.58 % (n=147) were male and 48.42% (n=138) were females. (Table No 02)

**Table No 02: Gender Distribution**

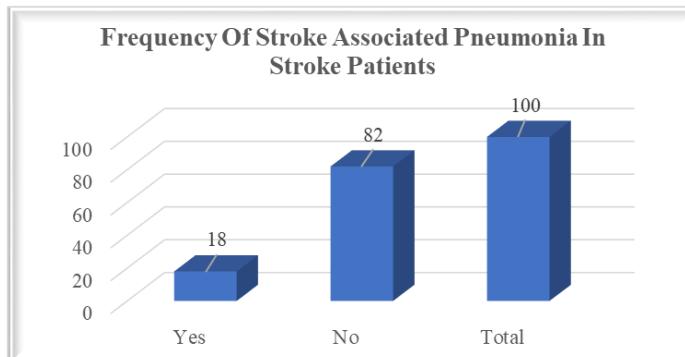
Gender	Frequency	Percentage
Male	147	51.58 %
Female	138	48.42 %



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 No 03: Frequency of stroke associated pneumonia in stroke patients**

Pneumonia	No. of patients	Percentage
Yes	18	18%
No	82	82%
<b>Total</b>	<b>100</b>	<b>100</b>



#### 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  $54.16 \pm 7.22$  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 [7]. Another study by Finlayson O [8] recorded that Stroke-associated pneumonia was observed in 587 patients (7.1%). Another recent study [9] recorded 4.1 to 56.6% of stroke associated pneumonia in cases admitted in NICUs, while 17 to 50% among MICUs, 3.9 to 23.8% in mixed studies, 3.9-44% among stroke units and 3.2 to 11% in rehabilitation cases. 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% [10,1], except a study where it was recorded as 4.1% [1]. However, they enrolled all types of neurovascular cases in addition to stroke patients and younger in age. The rate was higher among febrile cases (40.270.8%) [11], showing the importance of SAP as a risk factor for fever after stroke. The MICU studies reveal these findings in 17 and 50% [10,11], 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% [12,13,10,11], except a study where it was recorded in 44% of the cases [14]. 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 [15,16].

It is 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 [10,11]. Few of them included AIS alone, while most of them were performed in acute general floors or stroke units [10,12]. There may also be differences in definition of SAP [10], the incidence of mechanically ventilated cases may also vary [14]. 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. [17,18].

### CONCLUSION:

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

### REFERENCES:

1. Josephson SA, Moheet AM, Gropper MA, Nichols AD, Smith WS. Ventilator-associated pneumonia in a neurologic intensive care unit does not lead to increased mortality. *Neurocrit Care* 2010; 12:155–58.
2. Kamal AK, Itrat A, Murtaza M, Khan M, Rasheed A, Ali A. The burden of stroke and transient ischemic attack in Pakistan: a community-based prevalence study. *BMC Neurol* 2009; 9:58.
3. Farooq MU, Majid A, Reeves MJ, Birbeck GL. The epidemiology of stroke in Pakistan: past, present, and future. *Int J Stroke* 2009; 4:381-9.
4. Taj F, Zahid R, Syeda UE, Murtaza M, Ahmed S, Kamal AK. Risk factors of stroke in Pakistan: a dedicated stroke clinic experience. *Can J Neurol Sci* 2010; 37:252-7.
5. Koennecke HC, Belz W, Berfelde D. Factors influencing in-hospital mortality and morbidity in patients treated on a stroke unit. *Neurology* 2011; 77:965-972.
6. Ingeman A, Andersen G, Hundborg HH. In-hospital medical complications, length of stay, and mortality among stroke unit patients. *Stroke* 2011; 42:3214.
7. Chamorro A, Urra X, Planas AM. Infection after acute ischemic stroke: a manifestation of brain-induced immunodepression. *Stroke* 2007; 38:1097-103.
8. Finlayson O, Kapral M, Hall R, Asllani E, Selchen D, Saposnik G. Risk factors, inpatient care, and outcomes of pneumonia after ischemic stroke. *Neurology* 2011;77(14):1338-45.
9. Hannawi Y, Hannawi B, Rao CP, Suarez JI, Bershad EM. Stroke-associated pneumonia: major advances and obstacles. *Cerebrovasc Dis*. 2013;35(5):430-43.
10. Hilker R, Poetter C, Findeisen N. Nosocomial pneumonia after acute stroke: implications for neurological intensive care medicine. *Stroke* 2003; 34:975–81.
11. Yan F, Zhang D, Xu H, Guo H. Risk factors for fever in critically ill patients with acute newonset stroke. *Neurol Res* 2008; 30:394–99.
12. Vermeij FH, Scholte 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. *Cerebrovasc Dis* 2009; 27:465–71.
13. 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.
14. Yan F, Zhang D, Xu H, Guo H. Risk factors for fever in critically ill patients with acute newonset stroke. *Neurol Res* 2008; 30:394–99.

15. Lipson DM, Sangha H, Foley NC, Bhogal S, Pohani G, Teasell RW. Recovery from stroke: differences between subtypes. *Int J Rehabil Res* 2005; 28:303–08.
16. Teasell R, Foley N, Doherty T, Finestone H. Clinical characteristics of patients with brainstem strokes admitted to a rehabilitation unit. *Arch Phys Med Rehabil* 2002; 83:1013–16.
17. Vermeij FH, Scholte 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. *Cerebrovasc Dis* 2009; 27:465-71.
18. 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.