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Research Article

Prevalence of clinical risk factors of pneumonia in hospitalized acute stroke patients

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ABSTRACT

Introduction: Stroke is the second leading cause of death worldwide. Pneumonia is a major cause of in-hospital morbidity and mortality in acute stroke population, and contributes to increased length of hospital stay and hospitalization cost. **Objective:** The objective of this study was to determine the frequency of clinical factors responsible for pneumonia in hospitalized patients with acute stroke who develop pneumonia in first 7 days of stroke onset. **Material and Methods:** This cross sectional study was conducted in Medical Unit II, Jinnah Hospital Lahore.Present research was conducted from 01-11-2016 to 30-04-2017.250 patients with the diagnosis of pneumonia in acute stroke setting admitted in hospital were included in the study. Data regardinghistory of uncontrolled hypertension, dysphagia and level of consciousness was checked at admission of acute stroke patients. All the data was collected through a well-defined questionnaire. **Results:**In our study from 250 patients, it was observed that the minimum age was calculated as 26 years and maximum age was 70 years with mean and standard deviation of the age was 55.14 ± 9.99 years. There were 58.4% male patients 41.6% female patients. Uncontrolled Hypertension was present in 70.4% patients while it was absent in 29.6% patients. Impaired Level of Consciousness at Admission was present in 51.6% patients while it was absent in 48.4% patients. Dysphagia was present in 23.6% patients while dysphagia was absent in 76.4% patients. There was significant association between impaired level of consciousness and age having p-value = 0.002. Significant association was not found between history of smoking and previous history of uncontrolled hypertension with p-value 0.445.**Conclusion:**The frequency of uncontrolled hypertension was present in 70.4% patients, impaired level of consciousness at admission was present in 51.6% patients and dysphagia was present in 23.6% patients with acute stroke.

Key words: Stroke, Smoking, Impaired Level of Consciousness, Uncontrolled Hypertension, Dysphagia

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INTRODUCTION

The symptoms of brain ischemia may be transient, lasting seconds to minutes, or may persist for longer periods of time. Symptoms and signs remain indefinitely if the brain becomes irreversibly damaged and infarction occurs. Unfortunately, neurologic symptoms do not accurately reflect the presence or absence of infarction, and the tempo of the symptoms does not indicate the cause of the ischemia [1]. This is a critical issue because treatment depends upon accurately identifying the cause of symptoms.

Rupture of arterial aneurysms is the major cause of subarachnoid hemorrhage (SAH). Aneurysm rupture releases blood directly into the cerebrospinal fluid (CSF) under arterial pressure. The blood spreads quickly within the CSF, rapidly increasing intracranial pressure [2]. Death or deep coma ensues if the bleeding continues. The bleeding usually lasts only a few seconds but rebleeding is common. With causes of SAH other than aneurysm rupture (eg, vascular malformations, bleeding diatheses, trauma, amyloid angiopathy, and illicit drug use), the bleeding is less abrupt and may continue over a longer period of time [3].

Symptoms of SAH begin abruptly, occurring at night in 30 percent of cases. The primary symptom is a sudden, severe headache (97 percent of cases) classically described as the "worst headache of my life." The headache is lateralized in 30 percent of patients, predominantly to the side of the aneurysm. The onset of the headache may or may not be associated with a brief loss of consciousness, seizure, nausea, vomiting, focal neurologic deficit, or stiff neck [4].

The history and physical examination should be used to distinguish between other disorders in the differential diagnosis of stroke. As examples, seizures, syncope, migraine, and hypoglycemia can mimic acute ischemia [5]. The most difficult cases involve patients with focal signs and altered level of consciousness. It is important to ask the patient or a relative whether the patient takes insulin or oral hypoglycemic agents, has a history of a seizure disorder or drug overdose or abuse, medications on admission, recent trauma, or hysteria. The history is also important in separating ischemia from hemorrhage and distinguishing between subtypes of ischemia and hemorrhage [6].

Aims and objectives

The objective of the present research was

- To determine the frequency of clinical factors responsible for pneumonia in hospitalized patients with acute stroke who develop pneumonia in first 7 days of stroke onset.

MATERIAL AND METHODS

This cross sectional study was conducted in Medical Unit II, Jinnah Hospital Lahore.Present research was conducted from 01-11-2016 to 30-04-2017.250 patients with the diagnosis of pneumonia in acute stroke setting admitted in hospital were included in the study. Sample size of 250 cases is calculated with 95% confidence level, 5% margin of error and taking expected percentage of dysphagia i.e. 20.3% (least among all risk factors of pneumonia in hospitalized patients with acute stroke who develop pneumonia in first 7 day of stroke onset).

Inclusion criteria

1. Age 18 to 70 years. Either gender.
2. Patients with a diagnosis of acute stroke.
3. Patients who develop pneumonia with in first 7 days of acute stroke.

Exclusion criteria

1. Patients with previous history of stroke.
2. Patient having any neurological deficit before stroke.

Data Collection

250 patients with the diagnosis of pneumonia in acute stroke setting admitted in Medical Unit II, Jinnah Hospital Lahore, were included in the study. Verbal informed consent was taken from the patients. Data regardinghistory of uncontrolled hypertension, dysphagia and level of consciousness was checked at admission of acute stroke patients. All the data was collected through a well-defined questionnaire.

Statistical analysis

All the collected data was entered into SPSS version 20. Numerical variables i.e. age were presented by mean ±SD. Categorical variables i.e. gender, uncontrolled hypertension, level of consciousness at admission, dysphagia,were presented as frequency and percentages and

compared with chi-square test. P value of ≤0.05 was used as level of significance. Data was stratified for age, gender, type of stroke and smoking to deal with effect modifiers. Post-stratification chi-square test was applied taking p-value ≤ 0.05 as significant.

RESULTS

From 250 patients, it was observed that the minimum age was calculated as 26 years and maximum age was 70 years with mean and standard deviation of the age was 55.14 ± 9.99 years. Males were 146/250 (58.4%) while females were 104/250 (41.6%). Uncontrolled Hypertension was present in 176/250 (70.4%) patients while it was absent in 74/250 (29.6%) patients. Impaired Level of Consciousness at Admission was present in 129/250 (51.6%) patients while it was absent in 121/250 (48.4%) patients. Dysphagia was present in 59/250 (23.6%) patients while it was absent in 191/250 (76.4%) patients.

Table 1. Descriptive Statistics (n = 250)

	Minimum	Maximum	Mean	Std. Deviation
Age	26	70	55.14	9.99

By using chi-square test there was significant association between dysphagia and gender having p-value = 0.011. Significant association was not found between age and dysphagia with p-value 0.577. Type of stroke was significantly associated with the presence of dysphagia having p-value = 0.001. Significant association was not found between history of smoking and dysphagia with p-value 0.086.

Table 2. Presence of Previous History of Uncontrolled Hypertension

Uncontrolled Hypertension	Frequency	Percent
Present	176	70.4
Absent	74	29.6
Total	250	100.0

There was significant association between impaired level of consciousness and age having p-value = 0.002. Significant association was also found between impaired level of consciousness and type of stroke having p-value <0.001. Significant association was not found between gender and impaired level of consciousness with p-value 0.865 and also between history of smoking and impaired level of consciousness with p-value 0.203.

Table 3. Presence of Impaired Level of Consciousness at Admission

Impaired Level of Consciousness at Admission	Frequency	Percent
Present	129	51.6
Absent	121	48.4
Total	250	100.0

Significant association was not found between age and previous history of uncontrolled hypertension with p-value 0.977. Significant association was not found between gender and previous history of uncontrolled hypertension with p-value 0.826.

Table 4. Presence of Dysphagia

Dysphagia	Frequency	Percent
Present	59	23.6
Absent	191	76.4
Total	250	100.0

Table 5. Stratification of Dysphagia with respect to Age (n = 250)

Age	Dysphagia		Total	P-value
	Present	Absent		
< 55 years	22	79	101	0.577
≥ 55 years	37	112	149	
Total	59	191	250	

Significant association was not found between type of stroke and previous history of uncontrolled hypertension with p-value 0.301. Significant association was not found between history of smoking and previous history of uncontrolled hypertension with p-value 0.445.

Table 6. Stratification of Dysphagia with respect to Smoking (n = 250)

Smoking	Dysphagia		Total	P-value
	Present	Absent		
Yes	30	121	151	0.086
No	29	70	99	
Total	59	191	250	

DISCUSSION

The objective of the present research was to determine the frequency of clinical factors responsible for pneumonia in hospitalized patients with acute stroke who develop pneumonia in first 7 days of stroke onset. In this regard the present cross sectional study was conducted in Medical Unit II, Jinnah Hospital Lahore. So two hundred and fifty patients of acute stroke were included by fulfilling the inclusion and exclusion criteria by using non probability purposive sampling [7].

In our study from 250 patients, it was observed that the minimum age was calculated as 26 years and maximum age was 70 years with mean and standard deviation of the age was 55.14 ± 9.99 years. There were 58.4% male patients 41.6% female patients. Previous History of Uncontrolled Hypertension was present in 70.4% patients while it was absent in 29.6% patients. Impaired Level of Consciousness at Admission was present in 51.6% patients while it was absent in 48.4% patients. Dysphagia was present in 23.6% patients while it was absent in 76.4% patients [8].

In previous study, 159 patients (18-90 years) were admitted. Prevalence of pneumonia was 32%. Pneumonia was more frequent in patients with hemorrhagic stroke (OR: 4.36; 95%CI: 1.9-10.01, p < 0.001), higher National Institute of Health Stroke Scale (NIHSS) (p = 0.047) and, lower Glasgow Coma Score (GCS) (p < 0.0001). Patients with pneumonia had longer hospitalization (p < 0.0001). Multivariable logistic regression analysis identified NIHSS as an independent predictor of pneumonia (95%CI: 1.049-1.246, p = 0.002) [9]. Pneumonia was associated with severity and type of stroke and length of hospital stay. The severity of the deficit as evaluated by the NIHSS was shown to be the only independent risk factor for pneumonia in acute stroke patients [10].

In our study by using chi-square test there was significant association between dysphagia and gender having p-value = 0.011. Significant association was not found between age and dysphagia with p-value 0.577. Type of stroke was significantly associated with the presence of dysphagia having p-value = 0.001. Significant association was not found between history of smoking and dysphagia with p-value 0.086 [11].

There was significant association between impaired level of consciousness and age having p-value = 0.002. Significant association was also found between impaired level of consciousness and type of stroke having p-value < 0.001. Significant association was not found between gender and impaired level of consciousness with p-value 0.865 and also between history of

smoking and impaired level of consciousness with p-value 0.203.

CONCLUSION

The history of uncontrolled hypertension was present in 70.4% patients, impaired level of consciousness at admission was present in 51.6% patients and dysphagia was present in 23.6% patients with acute stroke patients who developed pneumonia within 7 days of stroke.

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