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Research Article

**CLINICAL RISK FACTORS OF PNEUMONIA IN  
HOSPITALIZED ACUTE STROKE PATIENTS**Dr Tahzeeb Mazhar<sup>1</sup>, Dr. Afeera Ahmad<sup>1</sup>, Dr. Ayemon Fatima<sup>1</sup><sup>1</sup>Ex-House Officer Nishtar Hospital, Multan.**Article Received:** September 2020    **Accepted:** October 2020    **Published:** November 2020**Abstract:**

**Introduction:** The symptoms of brain ischemia may be transient, lasting seconds to minutes, or may persist for longer periods of time. Hypertension is the most common and most important stroke risk factor, including isolated systolic hypertension.

**Aims and objectives:** The objective of the present research was to determine the clinical factors responsible for pneumonia in hospitalized patients with acute stroke.

**Material and methods:** This cross sectional study was conducted Nishtar Hospital, Multan during 2019. 150 patients with the diagnosis of pneumonia in acute stroke setting admitted in hospital were included in the study. Sample size of 150 cases is calculated with 95% confidence level, 5% margin of error and taking expected percentage of dysphagia. **Results:** From 150 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  $55.14 \pm 9.99$  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.

**Conclusion:** It is concluded that 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.

**Corresponding author:****Dr. Tahzeeb Mazhar,**

Ex-House Officer Nishtar Hospital, Multan.

QR code



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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. Hypertension is the most common and most important stroke risk factor, including isolated systolic hypertension. Epidemiologic studies show that there is a gradually increasing incidence of both coronary disease and stroke as the blood pressure rises above 110/75 mmHg. 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 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 clinical factors responsible for pneumonia in hospitalized patients with acute stroke.

**MATERIAL AND METHODS:**

This cross sectional study was conducted Nishtar Hospital, Multan during 2019. 150 patients with the diagnosis of pneumonia in acute stroke setting admitted in hospital were included in the study. Sample size of 150 cases is calculated with 95% confidence level, 5% margin of error and taking expected percentage of dysphagia. Verbal informed consent was taken from the patients. Data regarding history 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  $\pm$ SD. P value of  $\leq 0.05$  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  $\leq 0.05$  as significant.

**RESULTS:**

From 150 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  $55.14 \pm 9.99$  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.

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 01: 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 02: Stratification of Dysphagia with respect to Age**

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

### DISCUSSION:

In our study from 150 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  $55.14 \pm 9.99$  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 [7, 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].

### CONCLUSION:

It is concluded that 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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