



CODEN [USA]: IAJPBB

ISSN : 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**

SJIF Impact Factor: 7.187

Available online at: <http://www.iajps.com>

Research Article

**STUDY TO DETERMINE THE FREQUENCY OF ASPIRATION  
PNEUMONIA AMONG PATIENTS ADMITTED WITH  
ALTERED STATE OF CONSCIOUSNESS****Dr. Maryam Saghir<sup>1</sup>, Dr. Aleema Farooq<sup>2</sup>, Dr. Maria<sup>3</sup>**<sup>1,2</sup>King Edward Medical University Lahore, <sup>3</sup>DG Khan Medical College, DG Khan**Article Received:** November 2020 **Accepted:** December 2020 **Published:** January 2021**Abstract:**

**Introduction:** Aspiration pneumonia is a common complication in patients with impaired consciousness if general supportive care is not properly administered. There is no country-wide study of the incidence of pneumonia aspiration in hospitalized patients with impaired consciousness. The aim of this study was to investigate the incidence of aspiration pneumonia in patients with impaired consciousness admitted to the tertiary care hospital in our country.

**Methods:** This was a prospective observational study conducted among 50 adult patients with aspiration pneumonia with impaired consciousness admitted to the Medicine department of Mayo Hospital, Lahore for one-year duration from July 2019 to July 2020. Aspiration pneumonia was confirmed by clinical and laboratory tests. The altered conscious patient was assessed using the Glasgow Coma Scale. Case forms with the appropriate questionnaire were completed for all patients.

**Results:** The mean age ( $\pm$  SD) was  $38.9 \pm 17.3$  years. The maximum number (24.5%) of patients was found in the age group 51-60 years. The male to female ratio was 3: 1. The most common clinical symptoms were fever, chest pain, and a productive cough. The main triggers were stroke (64%), encephalitis (16%) and hepatic encephalopathy (16%).

**Conclusion:** The incidence of aspiration pneumonia in patients with impaired consciousness and hospitalization is slightly higher than in other studies that have previously been conducted internationally. The causes of more frequent illnesses may be crowded patients in a small area, malnutrition of patients, lack of knowledge of the caregiver and doctor about aspiration pneumonia prevention and care, poverty and a small number of doctors and nurses in relation to the large number of patients.

**Key words:** aspiration pneumonia, altered consciousness.

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Please cite this article in press Maryam Saghir et al, Study To Determine The Frequency Of Aspiration Pneumonia Among Patients Admitted With Altered State Of Consciousness., Indo Am. J. P. Sci, 2021; 08(1).

**INTRODUCTION:**

Aspiration pneumonia is the second most common main diagnosis among hospitalized patients with impaired consciousness. In the United States, several studies show that 5-15% of local pneumonia is due to aspiration pneumonia [1-2]. About 10% of patients hospitalized with altered consciousness or drug overdose will develop aspiration pneumonia. Aspiration pneumonia is more common in extremely young and elderly patients and in men than in women. Mortality from aspiration pneumonia is approximately 1% in an outpatient setting and up to 25% in those requiring hospitalization. Mortality from severe chemical pneumonia can be as high as 70% [3-4]. Aspiration pneumonia refers to pulmonary sequelae (inflammation of the lung parenchyma and bronchitis) resulting from abnormal passage of fluids, exogenous particles, endogenous secretions or gastric contents into the lower respiratory tract. The acute inflammatory response involves massive neutrophil recruitment with systemic development of cascades mediated by various cytokines (mainly IL-8) [5-6]. However, aspiration can cause - a. Chemical pneumonia: aspiration of gastric juice can cause fatal damage (Mendelson syndrome), including hemorrhagic bronchitis, pulmonary edema, and ARDS. b. Bacterial infection: infection is usually caused by aspiration of the oral flora, especially in patients with poor oral and throat hygiene. Pathogens that commonly cause aspiration pneumonia include *Streptococcus pneumoniae*, *Hemophilus influenzae*, Gram-negative bacilli, *Staphylococcus aureus*, and anaerobes. The substances taken in the lungs can lead to an abscess, empyema, bronchiectasis and acute respiratory failure. Clinical signs of anaerobic pneumonia aspiration include: Slow symptoms, usually impaired consciousness, lack of stiffness, no recovery, sputum often has a foul odor [7-8]. Obstruction: A large volume of aspirated material can lead to acute airway obstruction with lobar or segmental atelectasis. Post-aspiration complications are presumably related to the frequency, volume, nature of the aspiration, underlying diseases, and level of consciousness. Factors predisposing to aspiration pneumonia: The main predisposing factors are - disturbances of consciousness (acute stroke, convulsions, ICSOL, drug or alcohol overdose, hepatic encephalopathy, head trauma, hypoglycemia, etc.), Swallowing disorders (bulbar palsy, acute stroke, multiple sclerosis, Parkinson's disease, GBS, myasthenia gravis.) and others (gastrointestinal tube feeding, tracheostomy, prolonged vomiting, lying position, GERD). On the other hand, the level of consciousness is the relative state of awareness of oneself and those around them, and it ranges from fully

awake to coma [9]. A systematic evaluation of the conscious patient with an altered state of consciousness can be made using the Glasgow Coma scale (minimum 3, maximum 15). Worldwide, aspiration pneumonia is considered a common disease, but no current statistics are available. Aspiration pneumonia in an altered conscious patient is not uncommon in Pakistan. There are no exact cases of aspiration pneumonia in Pakistan. This study is an attempt to determine the frequency of aspiration pneumonia in hospitalized patients with impaired consciousness. This information is not currently available and is expected to form the basis of the information for future reference.

**METHOD AND MATERIAL:**

This prospective observational study was conducted at the Medicine department of Mayo Hospital, Lahore for one-year duration from July 2019 to July 2020. This prospective study enrolled 50 adult patients hospitalized with impaired consciousness in the medical department of Dhaka Medical College Hospital. After the course of the disease was fully explained, informed written consent was obtained from the patient's caregiver. Upon admission to the hospital, patients with altered consciousness seen by the ward doctor were examined by the examining doctor. Assessment was based on an interview and physical examination in a structured case form (CRF) by the examining physician. Patients clinically diagnosed as aspiration pneumonia were screened. The altered conscious patient was assessed using the Glasgow Coma Scale. Hematological measurements (TC of WBC, Hb%, ESR, platelet count), chest X-ray, sputum for Gram staining and culture sensitivity, gasometry, blood culture, blood urea, creatinine and incidentally blood sugar were performed. In the case of a scanty cough, the patient's sputum was collected after nebulization with hypertonic saline solution. Other studies such as brain CT, CSF Study, and LFT have been done to find the cause of altered consciousness. Qualitative data are presented as frequency and percentage, and continuous variable as mean and standard deviation. All data was processed and analyzed manually and by SPSS (Statistical Package for Social Sciences) on Windows 16.

**RESULTS:**

This prospectively documented study included 50 cases of patients with altered consciousness. The mean age ( $\pm$  SD) was  $57.42 \pm 13.63$  years and ranged from 25 to 90 years, and the maximum number (30%) of patients was found in the age group 51-60 years. Of the 50 patients, 35 (70%) were male and 15 (30%) females, in a ratio of 2.33: 1.

Aspiration pneumonia developed in 26% of the patients studied, of which 16% were male and 10% were female. Fever, cough and respiratory failure occurred in the majority of patients who

developed aspiration pneumonia among the studied patients. During physical examination, approximately 20% of patients had a temperature of 1000-1020F, 36% of patients had chest X-ray consolidation, and all patients had an altered mental state (GCS 7-12).

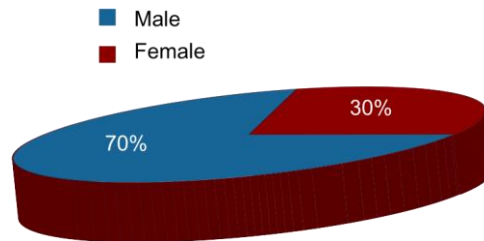
**Table-I**

*Age distribution of the study patients (n=50).*

Age in years	Number of patients	Percentage
25-40	06	12
41-50	10	20
51-60	15	30
61-70	13	26
71-80	04	08
81-90	02	04

Mean  $\pm$ SD = 57.42  $\pm$ 13.63  
Range (min - max) = (25-90)

The mean ( $\pm$  SD) respiratory rate was 25.14.0  $\pm$  7.47 / minute, ranging from 14 to 40 / minute. The main factors causing the change in consciousness of the studied patients were stroke, encephalitis and encephalopathy caused by hepatic encephalopathy and uremia.

**Fig.-1:** Distribution of patients according to sex (n=50).**Table II**

*Distribution of the patients developing Aspiration Pneumonia among the study patients (n=13).*

Sex	Number of patients (n)	Percentage	Total Percentage
Male	08	16	26
Female	05	10	

**Table III**

*Clinical features of aspiration pneumonia among the study patients (n=13).*

Clinical feature	Number of patients	Percentage
Fever	13	100
Cough	12	92.3
Respiratory distress	13	100
Vomiting	05	38.5
Chest pain	06	46.2

**DISCUSSION:**

In this small group of patients with impaired consciousness in the 3rd degree hospital, aspiration pneumonia could be identified in 26% (13) of patients. Out of 13, 61.5% (8) were male and 38.5% (5) were female. Internationally, approximately 10% of patients hospitalized for altered consciousness will develop aspiration pneumonia. Several studies have shown that 5-15% of the acquired pneumonia community is the result of aspiration pneumonia [10-11]. It can therefore be seen that in this study the incidence of aspiration pneumonia in patients with impaired consciousness and hospitalization is slightly higher than in other studies that have previously been conducted internationally. The causes of more frequent illnesses may be crowded patients in a small area, malnutrition of patients, lack of knowledge of the caregiver and doctor about aspiration pneumonia prevention and care, poverty and a small number of doctors and nurses in relation to a large number of patients. The mean age ( $\pm$  SD) was  $57.42 \pm 13.63$  years and ranged from 25 to 90 years, and the maximum number (30%) of patients was found in the 51-60 age group. El-Solh found that the mean age ( $\pm$  SD) was  $80.2 \pm 6.5$  years in their study. This study found that 70% (35) of patients were male and 30% (15) were female. The male to female ratio was 2.33: 1. El Solh found that of the 69 patients, 43 were male and 26 were female. In the present study, all patients had altered consciousness [12]. GCS ranged from 7 to 12 in all patients studied. Fever, cough and respiratory failure were present in the majority of patients who developed aspiration pneumonia among the patients studied, which is similar to the small previous study. Few patients experienced chest pain and vomiting. Most patients had a temperature of 100-102°F; few patients had a temperature greater than 103°F. The mean oxygen saturation (SpO<sub>2</sub>) was 94.3%, ranging from 85% to 100%. The mean ( $\pm$  SD) respiratory rate was  $25.14 \pm 7.47$  / min with a range of 14-40 / min. On physical examination, the main symptoms in patients with aspiration pneumonia were increased temperature, tachypnea, hypoxia, crackling, and rhonchi. Hypotension and cyanosis have been reported in a few patients. Bynum and Pierce (1976) found in their studies fever, cough, respiratory distress, tachypnea, diffuse rattling, and severe hypoxemia, cyanosis, wheezing, and apnea in approximately one-third of the cases (n = 50). Elsolh and Pietrantonio (2003) found dyspnea, fever, and delirium in the majority of patients in the study [13-14]. In this study, all patients had reduced awareness. Stroke was diagnosed in 32 (64%) patients, encephalitis in 8 (16%), hepatic encephalopathy in 8 (16%), and uremic encephalopathy in 2 patients. This study revealed that

neurological disorders were the major trigger of aspiration pneumonia in patients with altered consciousness. Finegold (1991) found that the main factors that predispose to aspiration pneumonia are decreased level of consciousness, dysphagia, periodontal disease, and mechanical interference associated with the insertion of different tubes into the respiratory or gastrointestinal tract. El-Solh (2003) found that in the study, 78% of patients had a stroke and 35% had COPD. This descriptive study is a small sample study that requires further research at different levels of hospitals [15]. A nationally representative system of pneumonia surveillance could replace periodic small studies.

**CONCLUSION:**

This prospective observational study was conducted in aspiration pneumonia in hospitalized patients with impaired consciousness. 26% of hospitalized patients with impaired consciousness developed aspiration pneumonia. The incidence of aspiration pneumonia in patients with impaired consciousness and hospitalization is slightly higher than in other studies that have previously been conducted internationally. The causes of more frequent illnesses may be crowded patients in a small area, malnutrition of patients, lack of knowledge of the caregiver and doctor about aspiration pneumonia prevention and care, poverty and a small number of doctors and nurses in relation to the large number of patients. Thus, education of patient and physician care personnel, adequate general and supportive patient care, vigilance, and an increase in physicians can reduce the incidence of aspiration pneumonia in conscious and hospitalized patients.

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