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Research Article

### A CROSS SECTIONAL STUDY; INCIDENCE OF ASPIRATION PNEUMONIA IN STROKE PATIENTS

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#### Abstract:

*This study is done in King Abdul Aziz National Guard hospital in AL-Ahsa, Saudi Arabia. Stroke associated pneumonia is involved in increasing the morbidity and mortality of the patient who suffered from an acute attack of stroke.*

*Aspiration Pneumonia is one of the most disastrous complications [12] in patients suffered from stroke. It besides increasing Hospital stay duration and financial burden also increases rate of death and life long disability. Early diagnosis is pivotal to management of Aspiration Pneumonia cases.*

*Objective:- The study was based on to find out the incidence of Aspiration Pneumonia in patient who suffered from stroke.*

*Study Type:- It is a prospective type of Cross-sectional study.*

*Data:- The data was collected from the patients who suffered from stroke in last 45 days, X-Rays chest were done along with sample was taken for culture from tracheal Aspirations.*

*Age:- Patients with age 45-70 years were enrolled in this study.*

*Results:- 28% of stroke patients enrolled were affected by the stroke in age group 45-57years. Mean age (49±5.12), and 72% of patients were in age group 57-70years,mean age (61±3.45).*

*Overall 26.4% of the patient of stroke suffered from aspiration pneumonia.*

*Conclusion:- Almost Every 4<sup>th</sup> patient of cerebrovascular accident is affected by the aspiration pneumonia.*

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**INTRODUCTION:**

Post stroke aspiration pneumonia is implicated to have highly increased morbidity and mortality of patients[1-2]. Stroke associated aspiration pneumonia is the one of the major health concern due to its poor prognosis and it significantly increases death rate and life long disabilities .[3]

The number of stroke patients is rapidly rising in the world, the most important cause is arteriosclerosis. The occlusion of the vessel may occur slowly as in arteriosclerosis or suddenly as in case of atrial fibrillation i.e thrombo-embolism, the part of the brain gets damaged due to occlusion of the blood vessel and consequently part or parts of the body are paralyzed. [34]

The patient becomes disable or bed ridden. In patients of stroke, the muscles associated with swallowing are often involved resulting in poor swallowing and it results in aspiration of food contents and pneumonia.[22]

Up to one-fourth of all stroke patients suffer from aspiration pneumonia. This significantly increases the morbidity and mortality of the affected patients.[2] Following stroke, the highest attributable cause of deaths and medical complications is pneumonia. Respiratory failure from the stroke may lead to intubation and use of ventilator in up to 7% of patients who suffered from an ischemic stroke and almost 35% of patients suffered from an hemorrhagic stroke.[26]

The application of ventilation support itself carries independent risk of pneumonia. According to the national nosocomial infection surveillance system, pneumonia is estimated to be the cause of more than 35% of all nosocomial infections in critical care units. The mortality rate of (vap) ventilator-associated pneumonia ( pneumonia developed while patient is on the ventilator) is estimated to be 25% to 30%.[8,16,31,15]

The patients suffering from comorbidities like ischemic heart disease and those who are in ICU neurology are at highest risk of developing aspiration pneumonia.[29]

**METHODOLOGY:**

it is a prospective type of Cross-sectional study done in King Abdul Aziz National Guard hospital in AL-Ahsa, Saudi Arabia.

**Duration:-**

Jun2017 to April 2018.

**Sample size:-**

250 patients were enrolled in the study who fulfilled the inclusion criteria i.e cerebrovascular accident in the last 3 days and previously not having pneumonia . Patients aging 45-70 were enrolled in this study .Among them 56% were males and 44%were females. And majority of the patients suffered from stroke associated pneumonia were in age group 57-70 years.

**Data Collection and Analysis:-**

The data of the enrolled patients was collected, repeated chest X-rays were taken on every 3rd day till 45 days and tracheal aspirations were taken for culture and microbiology. The quantitative variables like age, duration of the disease, severity of stroke were recorded and represented as mean .And the qualitative variable like gender, disease present or not were recorded and presented as median. Stratification of the data was done to control effect modifiers and chi square was applied. The data was analyzed by using spss21.

**RESULTS:**

250 Patients were distributed in different groups according to age gender.

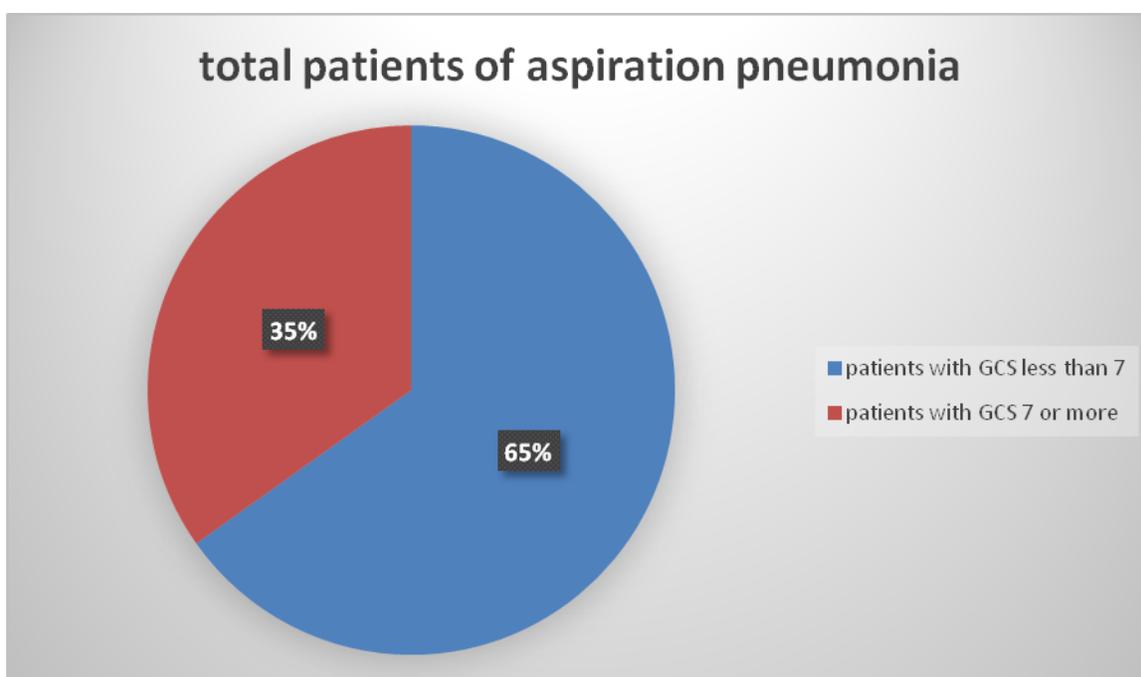
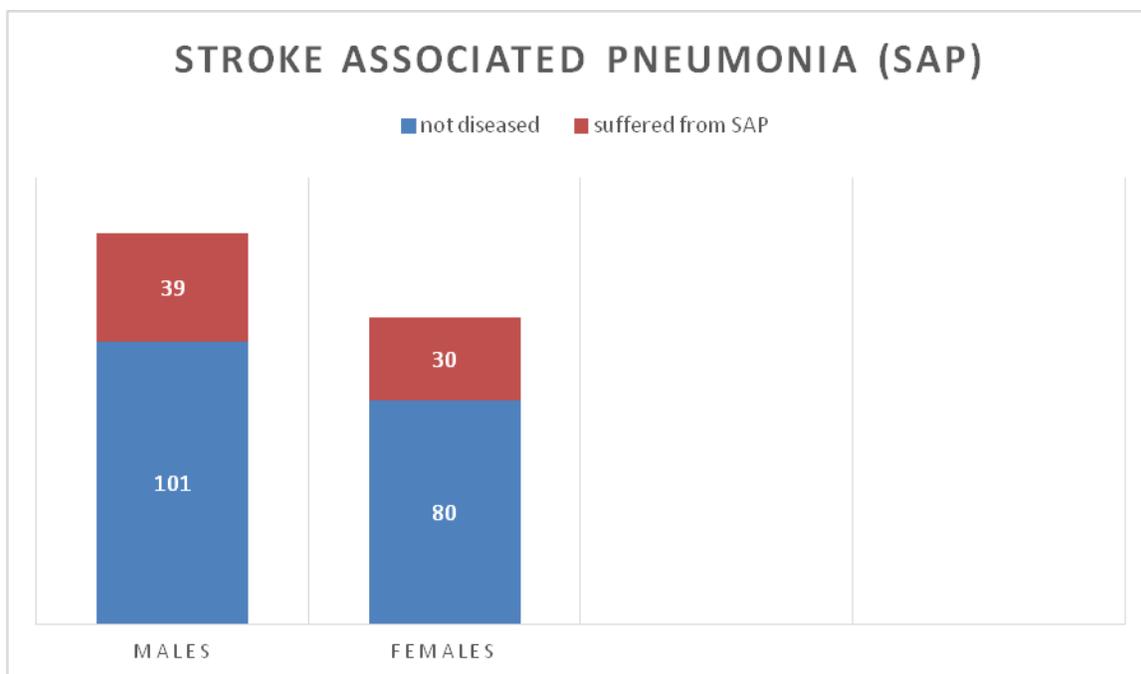
28% patients were 45-57years

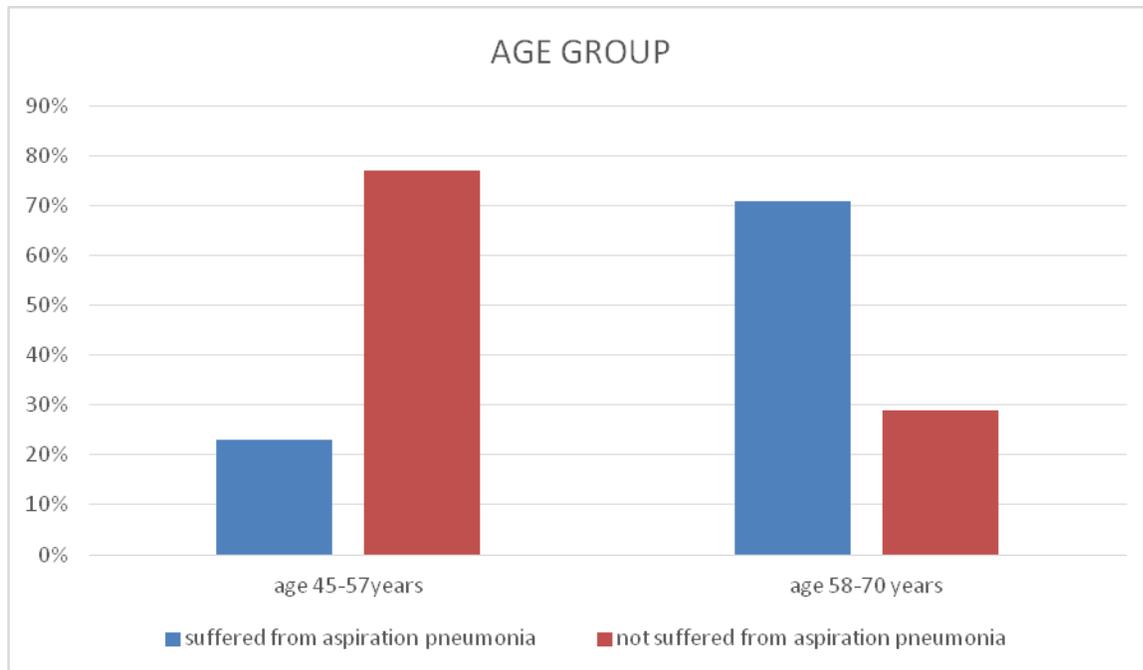
72% patients were 57-70years

56% males

44% females patients.

66 patients out of 250 suffered from aspiration pneumonia, 43 were critically ill and had GCS level less than 7 and 23 had GCS more than 7. The percentage of the male patients of aspiration pneumonia is slightly higher as compared to the females.The percentage of stroke is way higher in patients who suffered from co morbidities like chronic kidney disease, diabetes mellitus, chronic liver disease and COPD.64% of all the patients who suffered from stroke had co morbidity and percentage of males is higher i.e 59% as compared to the females 41%.





### DISCUSSION:

This study was based to assess the incidence of the Aspiration Pneumonia in the patients suffered from cerebrovascular accident.

As it is the most important cause of increased morbidity and mortality in patients of stroke.[3]

The mean age recorded was  $55 \pm 3.19$ , 140 males and 110 females were enrolled in the study.

The stroke patients suffered from aspiration Pneumonia was 66/250, 26.4% that is comparable to the results of recent study done by Hilker et al<sup>8</sup>, that showed mortality rate of SAP patients to be 26.9%.[8]

The stroke associated pneumonia is an hospital associated event, as the patient is old, feeble and has poor immunity and is more prone to hospital. acquired infections as well as aspiration pneumonia due to loss of proper swallowing.[20,22,32] A study conducted by Yeh et al<sup>14</sup>, in NICU, showed that early dysphagia studies done in patients of stroke decreased mortality.[14]

A prospective study was done by Ingeman et al, showed that the 30 day mortality rate of the stroke associated pneumonia is 24.1% and 1 year mortality was found to be almost 50%.[17]

A large number of patients who suffered from stroke are placed on nasogastric intubation but studies show

that it does not really improve the outcome and functional status of the patient but proper technique and improved methods OF feeding can decrease the mortality in the patients,

as showed by huang et al [20], in a study that decrease of mortality rate of the SAP patients was recorded who were fed by a trained nurse as compared to a family attendant.[20,27] In our study,64% of the patients who presented with stroke were having co morbidities like CRF, diabetes, CLD etc.

These co morbidities and health conditions also play an important role in the prognosis and complete recovery of the patients. The results of our study is in accordance with a study done by wilson<sup>4</sup>, the results show that the patients of stroke who were as well affected by COPD, Diabetes and CRF had 20% increased mortality rate.[4] The study is highly heterogeneous and it was hard to compare it with other studies done in ICUs as some researchers enroll only the Patients with sub arachnoid hemorrhage some enroll patients with cerebral hemorrhage and /or AIS and the role of mechanical ventilation support is also a big factor that can affect results of the study

In our study, the patients who had impaired consciousness levels, had increased risk of developing aspiration pneumonia as they are prone to aspire gastric contents due to gastric reflux and dysfunctional pharyngeal muscles activity.[20,22]

A similar study was done by Hamidon et al [18], which shows that the patients with GCS less than 9 and infarction of middle cerebral artery have poor prognosis and show increased mortality rate.[18]

The fluoroscopic deglutition studies can play an important role in the prevention of complications in the stroke patients.[20,27]

According to a study done by Upadya et al [11], in MICU, brain stem infarction and poor results of dysphagia studies are risk factors of early pneumonia and higher APACHE score and higher NIHSS score are the risk factors for late pneumonia. [11,28]

It was assessed that 11.2-59% of patients admitted in NICUs get affected by Aspiration Pneumonia, while the prevalence is 17-50% among MICUs and is 4.7-26% in mixed studies.[13,14,36]

The body temperature of the patients were monitored and it was recorded that febrile patients had higher frequency of SAP 46-75% as compared to afebrile patients.[30]

A number of studies have been done on the Stroke associated Pneumonia world wide and rate was between 4.2-27.4% except a study where it was found to be 47% the variation is may be due to patients having mechanical ventilation support , change in the severity of the stroke and use of nasogastric intubation.[31-33]

The utilization of the proper preventive, diagnostic and treatment recommendations result in improved outcome of this deadly disease and can prevent lifelong disability and life expectancy.

### CONCLUSION:

The incidence of Aspiration Pneumonia is very high in stroke patients and it must be diagnosed in time to manage and decrease the hospital stay duration of patient and avoid morbidity mortality. Simple and effective preventive measures can be instituted early and at low costs. Such measures might include diligent nursing care, elevation of head, hand hygiene oral and not nasal cannulation, institution of weaning protocols, minimization of sedation, and judicious use of antibiotics.

### Acknowledgment List:

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