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FUNCTIONAL ENDOSCOPIC EVALUATION OF DYSPHAGIA IN STROKE PATIENTS.

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ABSTRACT The dysphagia manifests as chest infections coughing, chocking painful swallowing or slow effortful swallow. The patients finally become malnourished, dehydrated, and develop aspiration pneumonia. The dysphagia in stroke patients causes alteration in quality of life. They may depend on eternal feeding. The functional endoscopic evaluation of swallowing function will provide the anatomy and physiology of system and will tell the food residue, laryngeal penetration, chances of aspiration. Total number of patients involved in this study is thirty. The patients with history of aspiration, cough during swallowing, chocking, painful or effortful swallowing are taken for the study.In our study stroke is common with age group 60-70 years in both men and women followed by 70-80 years of age group in both sexes In our study, in males hypertension is the most common cause of stroke while in females both diabetes and hypertension are the two combining factors leading to stroke. The level three and two have more secretions. These patients are more prone for aspiration. The patients are administered a lower level of diet or nil per oral. Fiberoptic endoscopic evaluation of swallowing is the gold standard technique used for the evaluation of swallowing disorders. FEES, is carried out in out patient clinic and cost effective without radiation hazards avoiding cine radiography and fluoroscopy and avoidance of aspiration of contrast material. FEES directly visualise the pharynx function.

KEYWORDS : Dysphagia, Storke , Fiberoptic Endoscopic Evaluation, Swallowing.

1.INTRODUCTION

Swallowing and deglutition are primitive functions of life. They are regulated by Brainstem.The swallowing mechanism altered or decreased causes misdirected bolus residue and pooling or aspiration. The dysphagia manifests as chest infections coughing, chocking painful swallowing or slow effortful swallow. The patients finally become malnourished, dehydrated, and develop aspiration pneumonia. The dysphagia in stroke patients causes alteration in quality of life. They may depend on eternal feeding. It may cause social isolation, long hospital stay for the treatment and increased cost for health delivery system. Increased mortality rates in dysphagia patients to other patients are approximately 13 times more. The development of cardiac arrhythmias and arthrosclerosis is 3 times higher during hospitalisation. The dysphagia is more common in older age group 70-80 years than the younger age group. Impaired laryngeal and pharyngeal sensation will cause the increased risk of aspiration. Weak air way protection by vocal cords and less will aggravate problems. Aged persons with stroke require high caloric diet and presence of dysphagia will result in decreased achievement of desired goals in nutrition and more chances of aspiration. The functional endoscopic evaluation of swallowing function will provide the anatomy and physiology of system and will tell the food residue, laryngeal penetration, chances of aspiration. With the correct investigation we will treat the patients safely and easily. Repeated assessment of patients overtime can be done.

2. AIMS AND OBJECTIVES:

Visualization of Secretion and pooling of saliva and overall management.

3. MATERIALS AND METHODS:

INCLUSION CRITERIA:

9^{th} ,10^{th} cranial nerve palsy.
Multiple cranial nerve palsy with dysphagia.
Patients with vocal cord palsy with dysphagia.
Stroke patients with dysphagia.

EXCLUSION CRITERIA;

Patients with malignancy if laryngopharynx, oropharynx, stricture oesophagus, drowsy, uncooperative patients.

INVESTIGATIONS:

- Nasal Endoscopic Evaluation.
- Video Laryngopharynx Evaluation.
- Functional Endoscopic Evaluation.

METHODOLOGY:

STUDY PLACE:

Rajiv Gandhi Government General Hospital, Chennai.

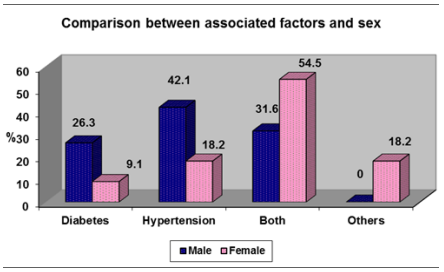
The patients are selected from the medical wards in our hospital. The patients who are suffering from recent cerebro vascular accidents with dysphagia are selected. Total number of patients involved in this study is thirty.The patients with history of aspiration, cough during swallowing, chocking, painful or effortful swallowing are taken for the study. Irrespective of the sex, both males and females are considered for this research. Children are not included in the study population. The stroke patients who are conscious and obey the commands and oriented are selected for the study. The unconscious patients, drowsy patients, uncooperative patients and patients having severe respiratory distress are not included in the study population.The patients in ventilators and severely deteriorating are not included in the study. The patients are examined locally on both nasal cavities and looked for cross deviated nasal septum and interior turbinate hyper trophy and polyps. The patients are shifted into ENT operation theatre from medical ward after getting the written consent. The decongestion pack is applied on both sides of the nostrils. It consists of 4% dylocaine 10 ml + 5 drops of Nasivion drops and cotton wick is soaked and kept in the nostrils before 20 minutes to start the procedure. The flexible nasopharyngo scope is lubricated and soaked with savlon and connected to camera with monitor. The patients are shifted into the theatre after removing the cotton wick and the flexible scopy is introduced. The scope is introduced into one of the nostrils between the floor of nasal cavity and inferior turbinate, without injuring the septum and nasal mucosa. The scope that is passed over the floor of nasal cavity slowly entered into nasopharynx Lateral walls and posterior walls of nasopharynx are examined. Scope passed down into oropharynx. Posterior one-third of the tongue valleculae and epiglottis are examined. The scope is passed down just above the level of epiglottis and vocal folds, pyriform sinus, aryepiglottic folds are visualized. The patients are advised to swallow the saliva and examined. The pooling of saliva or secretions in the vallecula, pyriform sinus, pharyngeal initiation, laryngeal elevation and laryngeal aspiration are noted. The secretion levels are noted when they are in vallecula and pyriform sinus. Or they present up to the level of vocal cords or they present below the level of cords are also noticed. Mobility of the vocal cords is also examined after the end of the swallowing test.The scope is withdrawn slowly from the laryngopharynx to oropharynx and to the nasal cavity.The patients are able to maintain the posture and are instructed to continue in the sit up position and those who are not able to maintain the posture are kept in the bed with supine position then flexible scope is passed. The whole proceedings are seen on the monitor and recording is done. The

findings are recorded. The patients are transferred to the ward after 20 minutes, from the procedure is completed.

4. RESULTS & DISCUSSION:

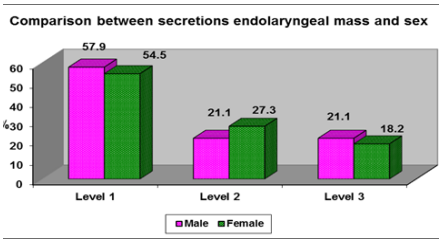
In our study stroke is common with age group 60-70 years in both men and women followed by 70-80 years of age group in both sexes In our study, in males hypertension is the most common cause of stroke while in females both diabetes and hypertension are the two combining factors leading to stroke.

FIGURE NO 1: COMPARISION BETWEEN ASSOCIATED FACTORS IN DYSPHAGIA IN STROKE PATIENTS



In our study the occurrence of dysphagia with stroke patients is very high. The dysphagia is maintained by cough during swallowing in both sexes, followed by effortful swallowing in the both sexes. Mortino and colleagues had studied in 2005 about dysphagia in stroke patients, and published 24 articles. The prevalence of dysphagia was lowest with screening less with water 30-45% For clinical testing it ranges from 51-55%. For instrumental testing it ranges from 64-78%. Flowers and colleagues have studied in 2011 and showed dysphagia occurrence with stroke location: 0% in cerebellum6% in midbrain 57% in lateral medulla43% in pons40% in medial medulla In our study most of stroke patients suffered dysphagia with infarct on the pontine area. Various bed side screening studies done on dysphagia patients: All these bedside assessments of swallowing without instrumentation do not have high specificity and sensitivity to the swallowing abnormalities and aspiration, and have poor intra judge and inter judge ability.Functional endoscopic evaluation of swallowing disorder using flexible nasal endoscopic provide detailed information about swallowing functions in term of physiology and anatomy as well as the presence of aspiration, penetration and residue of food particles.Endoscopic evaluation also gives an interpretation of secretion in the aero digestive tract in terms of amount and locations.This is useful in evaluation of patients who have normal safe level of secretions to dangerous level of secretions.

FIGURE NO 2: COMPARISION OF SECRETIONS



This will give the appropriate management reduce the incident of aspiration pneumonia and further treatment cost.

LEVEL 1:

secretion severity scale:Moderate level: No endolaryngeal secretions are present. Accumulation of secretion in vallecula and pyriform sinus.

LEVEL 2:

Severe level: Endolaryngeal secretions are present above the vocal cords. No aspiration is occurred.

LEVEL 3:

Profound level: Secretion present below the level of vocal cords.

The level three and two have more secretions. These patients are more prone for aspiration. The patients are administered a lower level of diet or nil per oral. The chart is prepared by Dunzelli and colleagues. In our study the profound level of secretions are found in four male patients and in two female patients. Severe level of secretions is found in four male and three female patients. Rest of the patients are having moderate level of secretions. Patients having the profound and severe secretions are advised to have Ryle's to be feeding and nil per mouth. This also gives differentiating between the laryngeal penetration and aspiration. The swallowing difficulty occurs following stroke and recovery after few weeks. The damage to the brain hemisphere which is having greater projection to the swallowing centres will account for the initial difficulty. The undamaged hemisphere will give the projections to swallowing muscles and recovery will occur. The act if phonation and swallowing are supplied by same motor unit. The swallowing is impaired than the act of phonation. Even though the vocal cords are normal and functioning well, the swallowing act impairment will lead to the micro aspirations and cough during swallowing will lead to the aspiration pneumonia, dehydration of the patients and which will cause the long hospital stay, intensive care setup, expense to ward, the health care system. In the stroke patients the muscles of swallowing are not affected. The neutral pathway is intact and neuromuscular junction is also patent. The neurotransmitter in the neurons will be reduced leading the act of swallowing impairment. The act of swallowing is regained after opposite normal hemisphere send the impulses to the affected muscle unit. Functional endoscopic evaluation is also useful in compensatory strategies in swallowing interventions. (Example: bolus modification postures and manoeuvre's). It is also useful to examine the compensatory strategies that are useful to the patients and will produce the desired effect to the patients.With FEES testing study conducted by Aviv about pneumonia outcome due to aspiration is decreased with bolus modification and other strategies.

5.CONCLUSION:

Functional endoscopic evaluation of swallowing disorder in stroke patients reveals that marked swallowing act impairment in these patients and swallowing muscles impaired unilaterally. The swallowing muscles recover faster than the skeletal muscles. The act of phonation is not impaired FEES give good view in alteration of muscular function in oropharynx and hypopharynx arch. It gives idea about secretions and pooling of saliva and food residue and their overall management.Airway protection and assessment can be carried out.It is portable and can be done at bedside of patients.Fiberoptic endoscopic evaluation of swallowing is the gold standard technique used for the evaluation of swallowing disorders.FEES, is carried out in out patient clinic and cost effective without radiation hazards avoiding cine radiography and fluoroscopy and avoidance of aspiration of contrast material. FEES directly visualise the pharynx function. Hypertension is the common etiological factor in males and both hypertension and diabetics are common etiological factors in females for stroke. Pons is the most common area affected and cough during swallowing is the most common presentation of dysphagia. All the patients are able to maintain the act of swallowing.

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