Research Paper Medical science

Habit of proper and adequate food chewing, avoiding water during meals and drinking water 1-2 hours after meals in patients of gastroesophageal reflux diseases (GERD).

Dr.Prashant Devidas Khuje | Associate Professor, Dept. of Physiology, Dr.D.Y.Patil Medical college, Pimpri, Pune-411018

ABSTRACT

Abstract and Summary: - Lifestyle modifications and healthy habits prevent disease occurrence and complications, reduce daily medication and economic burden in patients of GERD. 30 known patients of GERD with mild to moderate symptoms were voluntarily participated in the present study that aimed to reduce the symptoms and frequency of acid suppressive drug ingestion by developing habit of proper and adequate food chewing, avoiding water during meals and drinking water 1-2 hours after meals. Frequency of acid suppressive drug ingestion and symptoms before the commencement of study and after 2 months of healthy food chewing and water drinking habit were analysed by "Z test of proportion". It was observed that symptoms were decreased significantly with highly significant decreased in acid suppressive drug ingestion. Hence proper and adequate food chewing and water drinking habit can reduce the symptoms and medications in patients of GERD.

KEYWORDS GERD chewing avoid water

Introduction: - Gastroesophageal reflux disease (GERD) is one of the commonest condition affecting 10-20 % population worldwide. It is often associated with burning sensation in epigastrium, retrosternal chest pain radiating to neck, back, throat and mouth[5,16]. It is caused by hypersecretion of acid, decreased secretion of mucus and HCO_3^-, abnormal relaxation of the lower oesophageal sphincter and hiatus hernia [10, 17]. It not only leads to morbid conditions as chronic esophagitis & Barrett oesophagus, economic burden of chronic medications, acid suppression drug induced complications and surgical interventions but also mortality due to bleeding ulcers & gastro-oesophageal perforations [4,5,16,20].

Few studies were conducted to manage GERD by lifestyle modifications in healthy food eating only, but not on food chewing and water drinking habits [3, 11, 12, 18]. Hence we designed a study to reduce the symptoms and frequency of acid suppressive drug ingestion in patients of GERD by modifying food chewing and water drinking habit.

Aims and Objectives:**-** Our study aimed to reduce the symptoms and frequency of acid suppressive drugs ingestion in patients of GERD in 2 months of developing healthy habit of proper food chewing, avoiding water ingestion during meals and drinking water 1-2 hours after meals.

Materials and Methods:-
After giving information about the purpose of present study, 30 known patients of GERD (diagnosed on the basis of symptomatic relief after proton pump inhibitor and prokinetic medication) attending evening OPD were voluntarily participated in the study with their informed consent. Their particulars including name, age, occupation & socioeconomic status, present history of symptoms and relevant past history were entered in case sheet. Personal history including detailed food and water drinking habits, bowel habits, sleep, addiction and medication (frequent antacids consumption) was also noted.

Inclusion criteria: - Patients of both gender between 20-60 years having mild to moderate symptoms of GERD relieved by acid suppressive drugs

Exclusion criteria: - Children and pregnant women, patient severe symptoms of GERD, hematemesis, melena, renal, hepatic and other system disorders

The patients were educated about the importance of lifestyle modifications for symptomatic relief and reduction in acid suppressive drug ingestion in simple and comprehensive language. They were suggested and encouraged to develop the habit of proper food chewing, at least 20-25 times per morsel, avoiding water during meals and drinking water 1-2 hour after meals. Their difficulties were solved during follow up visits. After 2 months of developing proper and adequate food chewing and water drinking habit, their symptoms and frequency of acid suppressive drug ingestion were reviewed.

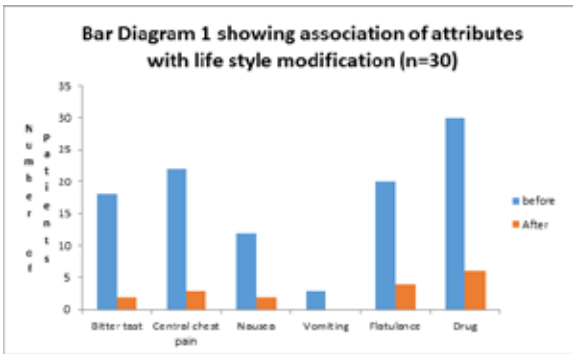
Patient's symptoms and acid suppressive drugs ingestion before and after developing targeted habit were analysed by Z test of proportion with probability (p) value of ≤ 0.05 was taken as significant.

Observations and Results:
After analysis it was observed that number of patients with attributes was decreasing significantly as signifies by the Z^2 test of individual attributes. All the symptoms were decreased significantly with z score of 5.313 for post prandial bitter taste (regurgitation of bitter fluid) in mouth, 6.491 for central chest(retrosternal) pain,3.321 for nausea, 1.825 for vomiting, 5.026 for flatulence and highly significant 10.954 for drug (Proton pump inhibitor + prokinetics)

Table 1. Showing number of patients with GERD symptoms and Drug ingestion before & and after lifestyle modification (n=30)

Symptoms	Bitter taste	Central chest pain	Nausea	Vomiting	Flatulence	Drug (PPI + Pk)	Total
Before	18	22	12	3	20	30	105
After	2	3	2	0	4	06	35
z score	5.313	6.491	3.321	1.825	5.026	10.9545	
Significance	**	**	**	**	**	***	

p≤ 0.05, n- number of patients ** Significant,*** Highly significant, PPI-Proton pump inhibitor, Pk-Prokinetic



Discussion:- All raw food including cereals, pulses etc., contains invisible water source. Cooking of food, curd, buttermilk, raw vegetables and fruits add water. Chewing of morsel for 20-25 times breaks up large food particles, facilitates saliva secretion containing 92% water forming bolus with saliva [2,10,14]. These factors may reduce additional need of water during meals for mouth dryness even with salty food. It was seen that pure water having delayed gastric emptying time than isotonic saline solution [1,14] may aggravate acid reflux when ingested in large quantity during meals or just after meals. Similarly, distention of stomach due to water ingestion may stimulate gastrin secretion from stomach and CCK from duodenum that increases HCL secretion and delays gastric emptying respectively[10,14]. Both factors may subsequently lead to acid reflux.

Vemulapalli [18] reviewed dietary and lifestyle factors contributing to symptoms of GERD and modification of these factors as an adjunctive therapy. Davide F et al [3] revealed that meal size and timing, avoiding heavily spiced or fatty food, lying down after a meal and consuming alcohol are essential factors for overall management of GERD. However Kaltenbach T et al [9] failed to show any association between dietary intervention, tobacco & alcohol consumption and GERD. Similarly Kurosawa [11] showed conflicting results.

Hyperosmolar chyme has delayed gastric emptying time that may precipitate acid reflux. Proper and adequate food chewing increase salivary flow making it more hyposmolar. Salivation during adequate food chewing facilitates rapid swallowing, oesophageal transport of solids and salivary amylase & lipase aid digestion[1,10,13] Similarly, gastric emptying time for smaller and liquid churned particles is less than larger ones[1,7,8,14]. Both factors may enhance gastric emptying of digested food; prevent gastric reflux in oesophagus and even nausea, vomiting and flatulence.

Water drinking during meals dilute gastric acidic pH inactivating pepsinogen which disfavour protein digestion leading to compensatory hyper secretion of gastric HCl[19]. This may subsequently delay gastric emptying triggering acid reflux.

Saliva buffers and neutralizes gastric secretions that reflux in oesophagus. It contains IgA and lysozyme having antibacterial action [10] may be against H. Pylori which is causative factor for peptic ulcer and other bacteria producing gases via fermentation [17]. Both factors may prevent damage to gastric mucosa from HCL action; prevent gastric reflux in oesophagus and even flatulence.

Conclusion: Lifestyle modification and healthy habits of proper and adequate food chewing, avoiding water during meals and drinking water 1-2 hours after meals can reduce the symptoms and frequency of acid suppressive drugs ingestion in patients of GERD.

References:-

1. Bijlani R.L, Manjunatha. S; 2011, Chap.6.3 Food in mouth, 6.4 Going on in the stomach, 6.5 Pathophysiology of Peptic ulcer, Understanding Medical physiology, Text book for Medical students, 4th edition, pg. no: 301-08, 310-14, 318-22. New Delhi, Jaypee Brothers Medical publisher (P) LTD.
2. Dantas RO[1], Oliveira RB, Aprile LR, Hara SH, Sifrim DA; 2005, Saliva transport to the distal esophagus. Scand J Gastroenterol, 40(9):1010-6.
3. Davide F, Eleonora S, Fabio B, Amanda V, Francesca P, Anna R; 2009; Body weight, lifestyle, dietary habits and gastroesophageal reflux disease; World J Gastroenterol. 15(14): 1690–1701
4. Eom CS[1], Jeon CY, Lim JW, Cho EG, Park SM, Lee KS; 2011,Use of acid-suppressive drugs and risk of pneumonia: a systematic review and meta-analysis. CMAJ. 183(3):310-9
5. Gómez JE 2004; Typical and atypical presentations of gastroesophageal reflux disease and its management. Bol Asoc Med P R.96(4):264-9.
6. Helm JF 1986, Esophageal acid clearance. J Clin Gastroenterol. 1986;8 Suppl 1:5-11.
7. Helm JF, Dodds WJ, Riedel DR, Teeter BC, Hogan WJ, Arndorfer RC; 1983,Determinants of esophageal acid clearance in normal subjects. Gastroenterology ;85(3):607-12.
8. Helm JF, Dodds WJ, Pelc LR, Palmer DW, Hogan WJ, Teeter BC 1984, Effect of oesophageal emptying and saliva on clearance of acid from the esophagus. N Engl J Med; 310(5):284-8.
9. Kaltenbach T[1], Crockett S, Gerson LB 2006; Are lifestyle measures effective in patients with gastroesophageal reflux disease? An evidence-based approach Arch Intern Med ;166(9):965-71.
10. Kim E. Barrett, Scott Boitano, Susan M. Barman, Heddwen L. Brooks; 2012 Chap. 25 Overview of Gastrointestinal functions and regulation, & Chap.27 Gastrointestinal motility p-457, 500-01, Ganong's Review of Medical Physiology, 24th Edition, New York, McGraw-Hill companies.
11. Kurosawa S : 2007; Lifestyle modification as a medical treatment for GERD; Nihon Rinsho;65(5):907-11.
12. Meining A[1], Classen M. 2000, The role of diet and lifestyle measures in the pathogenesis and treatment of gastroesophageal reflux disease. Am J Gastroenterol. 2000 Oct;95(10):2692-7
13. Pouderoux P[1], Shi G, Tatum RP, Kahrilas PJ.1999; Esophageal solid bolus transit: studies using concurrent videofluoroscopy and manometry. Am J Gastroenterol; 94(6):1457-63.
14. Sabyasachi S; 2008, Chap.70 Gastrointestinal system, Chap.75 Gastrointestinal hormones, Chap.76 Gastrointestinal disorders, Principles of medical physiology, 433-42, 456-57, 460-67, New York, Thieme Stuttgart publications, New York
15. Scott M[1], Gelhot AR, 1999; Gastroesophageal reflux disease: diagnosis and management; Am Fam Physician. 59(5):1161-9, 1199
16. Stephen L. Hauser, Dennis L. Kasper, Anthony s. Fauci, Dan L. Longo et al; 2015, Chap. 348 Peptic Ulcer Disease and Related Disorders, Harrison's Principles of Internal medicine, 19th edition, 1911-27, New York, McGraw-Hill Education.
17. Tripathy K.D: 2010, Drugs for Peptic ulcer, Essentials of Medical Pharmacology, 6th edition, 627-38, New Delhi, Jaypee Brothers Medical Publishers (P) LTD.
18. Vemulapalli R: 2008, Diet and lifestyle modifications in the management of gastroesophageal reflux disease. Nutr Clin Pract. 23(3):293-8.
19. Veronica H, Copyright © 2007, Drinking Water During Meals - Yoga For Beginners, www.yoga-for-beginners-a-practical-guide.com/drinking-water-during
20. Yu EW1, Bauer SR, Bain PA, Bauer DC; 2011,Proton pump inhibitors and risk of fractures: a meta-analysis of 11 international studies; Am J Med ;124(6):519-26.