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ASSOCIATION OF GENDER, ALCOHOLISM, PAN CHEWING, HYPERCHOLESTEROLEMIA AND HYPERTENSION WITH GASTRO ESOPHAGEAL REFLUX DISEASE (GERD) AND UPPER GI ENDOSCOPIC FINDINGS IN GERD- A CASE CONTROL STUDY

Physiology

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ABSTRACT

This was a case control study conducted in a tertiary care hospital in Kerala to find out the factors that can cause GERD among 138 subjects after getting Institutional Ethics Committee permission and Informed consent from the subjects. Data was collected with the help of questionnaire and also from the medical records. Data was analysed in the SPSS software; proportions and Odds ratio with 95% confidence interval were calculated. Pan chewing and Hypercholesterolemia were found to be associated with GERD and 24% of the patients had Barrett's esophagus on upper GI endoscopy.

KEYWORDS

GERD, Odds ratio, Upper GI endoscopy, Pan chewing, Hypercholesterolemia

INTRODUCTION

GERD is a condition that develops when there is frequent regurgitation of stomach contents back into the esophagus.[1] Its prevalence in general population is about 12-17% worldwide and prevalence in Asian population is a little less than the Western population. In a study conducted in India, prevalence of GERD was found to be 16.2%.[2]

There are many suggested risk factors for GERD like advancing age, male sex, obesity, tobacco use, pan chewing, alcohol abuse, spicy and oily food, Diabetes mellitus, hypercholesterolemia, hypertension, fatty liver, hypothyroidism, frequent intake of coffee and carbonated drinks, irregular food intake, regular intake of drugs like NSAIDs etc. Some of the factors are proved risk factors and some are yet to be proved. From previous studies, we can see that some of the proved risk factors of GERD are age, obesity, hiatus hernia, alcohol drinking and cigarette smoking.[3]

Upper GI endoscopy is the main diagnostic technique of choice for GERD. It can detect the complications of GERD like Barrett's Esophagus and detect development of Adenocarcinoma of lower end of esophagus earlier.[4]

So, this study was planned to find out some of the associated factors of GERD and endoscopic findings in GERD.

MATERIAL AND METHODS

This was an age matched case control study conducted among the patients with Gastro Intestinal Symptoms attending the Medical Gastroenterology OPD of Sree Gokulam Medical College, Thiruvananthapuram. Sample size of 138 (cases 46 and controls 92) and was calculated by taking the Odds ratio as 3 from a previous study. Classified patients attending Gastro OPD into patients with GERD and persons without GERD by applying GERDQ and collected details regarding the risk factors of GERD among both groups using a pre tested questionnaire. Collected the details of Endoscopic findings from the medical records.

GERDQ is a simple tool to assess the symptoms of GERD. The GERDQ was based on three existing questionnaires (the Reflux Disease Questionnaire, the Gastrointestinal Symptom Rating Scale, and the GERD Impact Scale) and was validated in the Diamond study (clinical trial number: NCT00291746).[5] It is validated in India by Madan K et al.[6] The score was from 0 to 18. A score of less than 8 was taken as 'no GERD' and a score of 8 and above was taken as a 'case of GERD'. Symptoms within the last one week were taken.

Data was compiled and analysed using Microsoft Excel and SPSS. We calculated proportions and Odds ratio with 95% CI.

RESULTS

Description of Study Population

Total number of study subjects was 138, which included 46 cases with GERD and 92 controls without GERD.

Most of the study subjects were in the age group 40 to 49 yrs and was 32%.59% of the study population were males. 93% of the people were from rural areas. 75% of the people were studied up to higher secondary level. 93% of the study subjects were married. 12% were alcoholics and 14% were pan chewers. 45% had hyperchole sterolemia. 15% were hypertensives. This is shown in Table 1.

Table 1: Description of Study Population

Variable	Group	Frequency	Percentage
Age	Less than 30yrs	14	10%
	30 - 39 yrs	32	23%
	40 - 49 yrs	44	32%
	50 - 59 yrs	26	19%
	60 - 69 yrs	9	7%
	More than 69 yrs	13	9%
Gender	Male	82	59%
	Female	56	41%
Residence	Rural	129	93%
	Urban	9	7%
Education	Up to Higher secondary	103	75%
	Above Higher secondary	35	25%
Marital Status	Unmarried	7	5%
	Married	129	93%
	Widowed	2	1%
Alcohol Abuse	Alcoholic	16	12%
	Non-Alcoholic	122	88%
Pan-chewing	Pan-chewer	20	14%
	Non-Pan-chewer	118	86%
Hypercholestero lemia	Present	62	45%
	Normal Cholesterol	76	55%
Hypertension	Hypertensive	21	15%
	Non-Hypertensive	117	85%

Risk factors of GERD

Odds ratio (OR) with 95% Confidence Intervals were found out to assess the associated factors. If Odds ratio is above one that variable is considered as a risk factor. For example, if "N" is the OR for a particular factor the person with that will be having "N" times more risk of developing GERD than a person without that factor. It is statistically significant if the upper and lower limit of 95% CI is above one.

In this study **Pan chewing and Hypercholesterolemia** were found to be associated with GERD by Univariate analysis.

Table 2: Associated factors of GERD

Variable	Group	Case	Control	Total	Odds Ratio (95% CI)
Gender	Male	29	53	82	1.255 (0.606 - 2.599)

	Female	17	39	56	
Alcohol Abuse	Alcoholic	6	10	16	1.23
	Non-Alcoholic	40	82	122	(0.418 - 3.623)
Pan chewing	Pan chewer	12	8	20	**3.706**
	Non pan chewer	34	84	118	**(1.392 - 9.867)**
Hypercholesterolemia	DLP	28	34	62	**2.654**
	No DLP	18	58	76	**(1.281 - 5.495)**
Hypertension	Hypertensive	8	13	21	1.279
	Non-Hypertensive	38	79	117	(0.489 - 3.348)

We could not find any association of gender, alcoholism and hypertension with GERD. This is shown in Table 2.

Endoscopic Grading in GERD patients

Table 3: Endoscopic Findings in GERD patients: Los Angeles Grading

Finding	Frequency	Percentage
LA Grade A	18	39%
LA Grade B	11	24%
Barrett's Esophagus	11	24%
Normal Finding	5	11%
Schatzki's Ring	1	2%

Endoscopically GERD is graded by Los Angeles grading that includes Grade A, B,C and D. 39% of the GERD patients were having LA grade A . 24% had Barrett's esophagus. 11% of GERD patients had normal findings on endoscopy that means they had non-erosive esophagitis. This is shown in Table 3. Figure 1 shows LA Grading of GERD.[7]

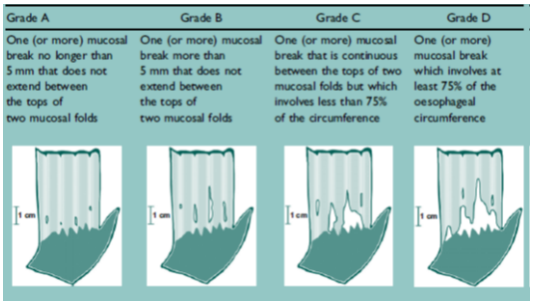

Figure 1: Los Angeles grading of GERD

Schatzki ring is a mucosal or submucosal membrane. It is a benign condition at the squamocolumnar junction of the lower end of esophagus that does not contain muscularis propria.[8] The upper surface is covered with squamous and the lower surface is covered with columnar epithelium. It will be always associated with hiatal hernias.

DISCUSSION

"Association of Gender, Alcoholism, Pan chewing, Hypercholesterolemia and Hypertension with Gastro Esophageal Reflux Disease (GERD) and Upper GI endoscopic findings in GERD" was a case-control study done in 46 GERD patients and 92 subjects not having GERD. Cases and controls were patients attended Medical Gastro OPD of Sree Gokulam Medical College, Venjaramoodu. Details regarding the subjects as well as risk factors were collected using a questionnaire and from the medical records. Data was analysed in SPSS and found out Proportions and Odds ratio with 95% Confidence Interval.

In this study we could not find out any association between gender and GERD. But in a study conducted by Kim et al.[9] it is found that non erosive reflux disease is more in females but pathologic esophagitis is more in males.

In our study we could not find out any association between alcohol consumption and GERD. In a meta-analysis conducted by Jiaqi Pan et al alcohol drinking was associated with GERD.[10]

In this study **Pan chewing** was found to be associated with GERD. In another study conducted in South India in an urban population also pan masala chewing was a risk factor of GERD.[11]

Here in this study **Hypercholesterolemia** was found to be an associated factor of GERD. In a study by Eslick GD et al also high cholesterol was an associated factor of GERD.[12]

In our study Hypertension was not associated with GERD. But in a study by Li ZT et al there was correlation between hypertension and GERD.[13]

In the study 11% of GERD patients had normal findings and 24% had Barrett's esophagus.40-60%may not have esophageal changes and are cases of "Endoscopy Negative Reflux Disease" (ENRD) as per D Armstrong.[14]

CONCLUSION

In the study **Pan chewing and Hypercholesterolemia** are found to be associated factors of GERD. So, we can conclude that it is a life style associated disease and by the modification of unhealthy lifestyles we can control the disease.

24% of the patients in our study had Barrett's esophagus on upper GI endoscopy. So early endoscopy can detect the erosive changes and can prevent the complications like development of carcinoma.

LIMITATIONS

Could not do a proper follow up.

REFERENCES

1. Antunes C, Aleem A, Curtis SA. Gastroesophageal Reflux Disease. [Updated 2021 Jul 18]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK441938/
2. Vineet Ahuja,Kaushal Madan , Saurabh Gupta , Akshay Raizada ,Mahesh Prakash Sharma, Praveen Kumar Sharma, "Prevalence, severity and risk factors of symptomatic gastroesophageal reflux disease among employees of a large hospital in Northern India," *Indian Journal of Gastroenteroogyl*, vol. 30, no. 3, pp. 128–134, May–June 2011.
3. Han-Chung Lien, Chi-Sen Chang, Yen-Chun Peng, Chung-Wang Ko, Ming-Chih Chou Shou-Wu Lee, "Impact of body mass index and gender on quality of life in patients with gastroesophageal reflux disease," *World Journal of Gastroenterology* , vol. 18, no. 36, pp. 5090-5095, September 2012, doi:10.3748/wjg.v18.i36.5090.
4. Nicholas J. Shaheen, David S. Weinberg, Thomas D. Denberg, Roger Chou, Amir Qaseem, Paul Shekelle, "Upper Endoscopy for Gastroesophageal Reflux Disease: Best Practice Advice From the Clinical Guidelines Committee of the American College of Physicians"; Annals of Internal Medicine, volume 157, Issue 11, pages 808-816 , December 4, 2012
5. [Online]. http://clinicaltrials.gov/ct2/show/NCT00291746
6. Ahuja V, Gupta SD, et al Madan K, "Impact of 24-h esophageal pH monitoring on the diagnosis of gastroesophageal reflux disease: defining the gold standard.," *Journal of Gasteroenterology and Hepatology*, vol. 20, pp. 30–37, 2005.
7. Dent J, Bennett JR et al. Lundell LR, "Endoscopic assessment of oesophagitis: clinical and functional correlates and further validation of the Los Angeles classification," Gut , vol. 45, no. 2, pp. 172–180, 1999.
8. Watts LD, Patel K. Schatzki Ring. [Updated 2020 Sep 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: https:// www.ncbi.nlm.nih.gov/books/NBK519022/
9. Kim, Y. S., Kim, N., & Kim, G. H. (2016). Sex and Gender Differences in Gastroesophageal Reflux Disease. Journal of neurogastroenterology and motility, 22(4), 575–588. https://doi.org/10.5056/jnm16138
10. Pan J, Cen L, Chen W, Yu C, Li Y, Shen Z. Alcohol Consumption and the Risk of Gastroesophageal Reflux Disease: A Systematic Review and Meta-analysis. Alcohol Alcohol. 2019 Jan 1;54(1):62-69. doi: 10.1093/alcalc/agy063. PMID: 30184159.
11. Wang, H. Y., Leena, K. B., Plymoth, A., Hergens, M. P., Yin, L., Shenoy, K. T., & Ye, W. (2016). Prevalence of gastro-esophageal reflux disease and its risk factors in a community-based population in southern India. BMC gastroenterology, 16, 36. https://doi.org/10.1186/s12876-016-0452-1
12. Eslick GD, Talley NJ. Gastroesophageal reflux disease (GERD): risk factors, and impact on quality of life-a population-based study. J Clin Gastroenterol. 2009 Feb;43(2):111-7. doi: 10.1097/MCG.0b013e31815ea27b. PMID: 18838922.
13. Li ZT, Ji F, Han XW, Wang L, Yue YQ, Wang ZG. The Role of Gastroesophageal Reflux in Provoking High Blood Pressure Episodes in Patients With Hypertension. J Clin Gastroenterol. 2018 Sep;52(8):685-690. doi: 10.1097/MCG.0000000000000933. PMID: 28961574; PMCID: PMC6110619.
14. Armstrong D. Endoscopic evaluation of gastro-esophageal reflux disease. Yale J Biol Med. 1999 Mar-Jun;72(2-3):93-100. PMID: 10780570; PMCID: PMC2579014.