



INTERPRETATION OF PSEUDOLYMPHOMA AND ADENOCARCINOMA GASTRIC BIOPSIES

Pathology

Dr. G. Vijayalakshmi	M.D, Professor, Melmaruvathur Adhiparasakthi Institute of Medical Sciences, Melmaruvathur.
Dr. A. Vijay*	M.D, Assistant Professor, Melmaruvathur Adhiparasakthi Institute of Medical Sciences, Melmaruvathur. *Corresponding Author
Dr. M. Sudha	M.D, Assistant Professor, Melmaruvathur Adhiparasakthi Institute of Medical Sciences, Melmaruvathur.

ABSTRACT

In our day to day life and modern life style so many of us preferring hotel foods instead of home made food. Since hotel foods are so much adulterated with toxic substances and also with carcinogenic agents because of cheap money of these adulterated food stuffs. Food habits like taking severe spicy and heavily salted hotel foods with aerated cool drinks makes changes in the gastric mucosa by making it prone for malignant changes. . Scientific evidence suggests that the main interactions between carbon dioxide and the gastrointestinal system occur in the oral cavity, the esophagus and the stomach Gastric or stomach cancer typically originates from the mucus-producing cells on the inside lining of the stomach. As early symptoms are rare, it is often diagnosed at an advanced stage. Not only adenocarcinomas and but pseudo lymphoma also presented in the gastric biopsies. So we conduct a study of correlation of gastric biopsy changes with spicy and heavily salted food habits with aerated drinks.

KEYWORDS

gastric biopsy, spicy food , salted food and aerated drinks.

MATERIAL AND METHODS:

Between august 2019 to november 2019 60 patients were got admitted in melmaruvathur adhiparasakthi institute of medical science with the diagnosis of gastritis.

Endoscopy biopsy done and we collected data regarding age, sex , smoking habits, food habits regarding taking spicy and salted food and frequent visit to restaurants for dining with addition of aerated drinks.

Case study of 60 patients with gastric biopsy were taken and it is analyzed with their food habits.

In these 60 cases 35 cases are males and 25 cases are females.

In males most of the cases are belong to 20 to 30 years of age.

In females most of the cases are belong to 20 to 40 years of age.

sex	20 --30	30- 40	40-50
males	15	10	10
females	10	10	5

Most of the cases are diagnosed as chronic gastritis .

HPE	20-30	30-40	40-50
Chronic gastritis	20	15	13
Gastric malignancy	0	2	2
Pseudo lymphoma	5	3	0
Food habits (spicy and heavily salted food)	20--30	30-40	40-50
Only home made food	5	6	6
Hotel food occasionally	5	8	4
Frequent hotel food	8	3	3
Aerated drinks	7	8	2

Age group	Helicobacter pylori positive in gastric biopsy
20-30	10
30-40	8
40-50	7

HPE	Helicobacter pylori positive in gastric biopsy
Gastritis	13
Pseudolymphoma	8
Gastric malignancy	4

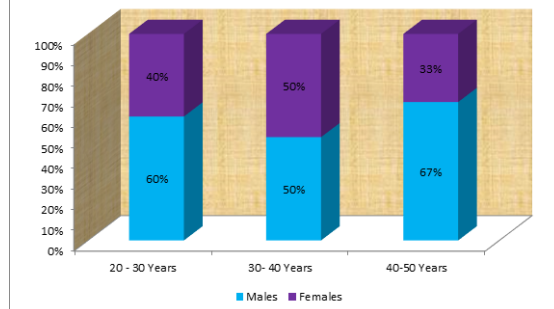
Food habits –with heavily salted and spicy food	Helicobacter pylori positive in gastric biopsy
---	--

Only home made food-spicy and heavily salted	8
Occasional hotel food-spicy and heavily salted	6
Frequent hotel food-spicy and heavily salted	11

Food habits (heavily salted and spicy food)	Age group	HPE
Severe erosive bleeding with acute gastritis	20 -30	5
Recurrent gastritis	30-40	7
Gastritis with minimal atypia	40-50	4

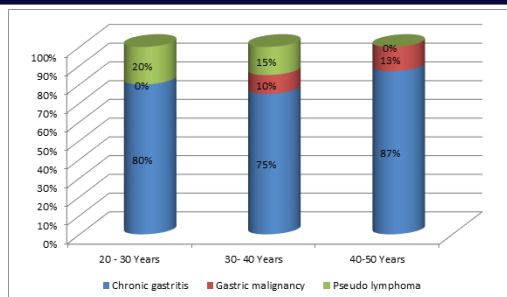
Spicy and heavily salted food with aerated drinks-dysplasia	HPE
Dysplasia with minimal atypia	3
Dysplasia with moderate atypia	6
Severe atypia with malignant change	4

sex	20 - 30 Years		30- 40 Years		40-50 Years		total	
	N	%	N	%	N	%	N	%
Males	15	60%	10	50%	10	67%	35	58%
Females	10	40%	10	50%	5	33%	25	42%
Total	25	100%	20	100%	15	100%	60	100%



Most of the cases were diagnosed as chronic gastritis .

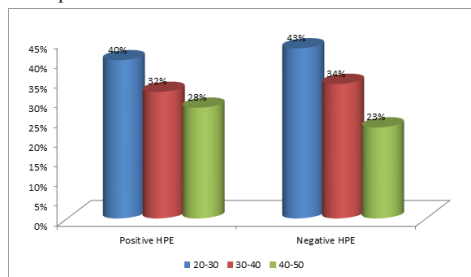
HPE	20 - 30 Years		30- 40 Years		40-50 Years		total	
	N	%	N	%	N	%	N	%
Chronic gastritis	20	80%	15	75%	13	87%	48	80%
Gastric malignancy	0	0%	2	10%	2	13%	4	7%
Pseudo lymphoma	5	20%	3	15%	0	0%	8	13%
Total	25	100%	20	100%	15	100%	60	100%



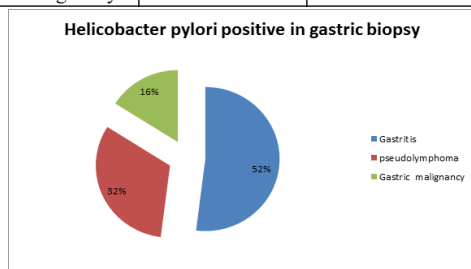
	20 - 30 Years		30- 40 Years		40-50 Years		total	
	N	%	N	%	N	%	N	%
Only homemade food	5	20%	6	30%	6	40%	17	28%
Hotel food occasionally	5	20%	6	30%	4	27%	15	25%
Frequent hotel food	8	32%	3	15%	3	20%	14	23%
Aerated drinks	7	28%	5	25%	2	13%	14	23%
	25	100%	20	100%	15	100%	60	100%

Age group	Helicobacter pylori positive in gastric biopsy		Helicobacter pylori Negative in gastric biopsy		total	
	No	%	No	%	No	%
20-30	10	40%	15	43%	25	42%
30-40	8	32%	12	34%	20	33%
40-50	7	28%	8	23%	15	25%
Total	25	100%	35	100%	60	100%

chi-square statistic is 0.2057. The p-value is .902256. The result is not significant at $p < .05$.

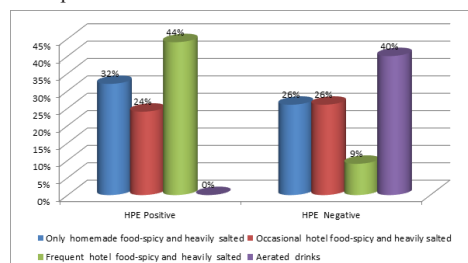


HPE	Helicobacter pylori positive in gastric biopsy	
Gastritis	13	52%
pseudolymphoma	8	32%
Gastric malignancy	4	16%

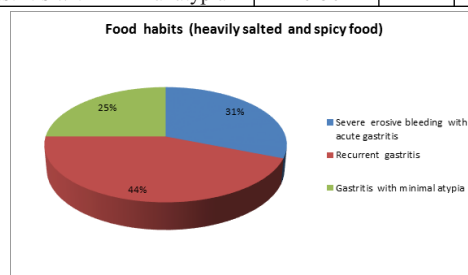


	Helicobacter pylori positive in gastric biopsy		Helicobacter pylori Negative in gastric biopsy		total	
	No	%	No	%	No	%
Only homemade food-spicy and heavily salted	8	32%	9	26%	17	28%
Occasional hotel food-spicy and heavily salted	6	24%	9	26%	15	25%
Frequent hotel food-spicy and heavily salted	11	44%	3	9%	14	23%
Aerated drinks	0	0%	14	40%	14	23%
Total	25	100%	35	100%	60	100%

chi-square statistic is 14.7108. The p-value is .002081. The result is significant at $p < .05$.

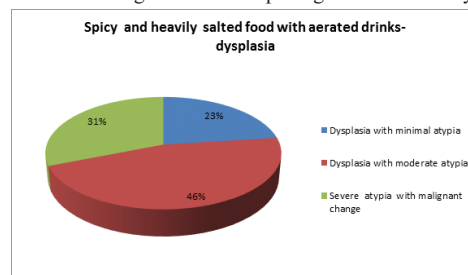


Food habits (heavily salted and spicy food)	Age group	HPE	%
Severe erosive bleeding with acute gastritis	20 - 30	5	31%
Recurrent gastritis	30-40	7	44%
Gastritis with minimal atypia	40-50	4	25%



	HPE	
Spicy and heavily salted food with aerated drinks-dysplasia	N	%
Dysplasia with minimal atypia	3	23%
Dysplasia with moderate atypia	6	46%
Severe atypia with malignant change	4	31%

H. pylori is a Gram-negative bacterial pathogen that selectively



DISCUSSION;

H. pylori is a Gram-negative bacterial pathogen that selectively colonizes the gastric epithelium. The bacterium is urease, catalase, and oxidase positive, is spiral shaped, and possesses 3 to 5 polar flagella that are used for motility. In addition, the majority of *H. pylori* strains express virulence factors that have evolved to affect host cell signaling pathways. Among many unique characteristics of *H. pylori*, one of the most remarkable is its capacity to persist for decades in the harsh gastric environment due to an inability of the host to eliminate the infection. Unlike other viruses and bacteria, *H. pylori* has evolved the ability to colonize the highly acidic environment found within the stomach by metabolizing urea to ammonia via urease, which generates a neutral environment enveloping the bacterium. *H. pylori* infection significantly increases gastric cancer risk. Uemura et al reported that gastric cancer developed in approximately 3% of *H. pylori*-infected patients, compared to none of the uninfected patients. Eradication of *H. pylori* significantly decreases the risk of gastric cancer in infected individuals without premalignant lesions. Randomized prospective studies demonstrated that eradication significantly reduced the presence of premalignant lesions, providing additional evidence that this organism has an effect on early stages of gastric carcinogenesis. *H. pylori* also activates proinflammatory cyclooxygenase (COX) enzymes. Cyclooxygenases catalyze key steps in the conversion of arachidonic acid to endoperoxide (PGH₂), a substrate for a variety of

prostaglandin synthases that catalyze the formation of prostaglandins and other eicosanoids COX-2 expression is further increased within gastric premalignant and malignant lesions.

H. Pylori infection causes chronic inflammation of the gastric mucosa and induces infiltration of mono- and polynuclear cells into the gastric mucosa. Persistent infection can induce atrophic changes and intestinal metaplasia. *H. pylori* infection contributes to a wide variety of upper gastrointestinal tract diseases, including gastroduodenal ulcer, gastric adenocarcinoma, gastric mucosal-associated lymphoid tissue lymphoma.

Endoscopic features identified in this study. (1) The mucus on the gastric mucosa, (2) diffuse redness, (3) spotty redness of fundic mucosa, (4) patchy redness, (5) enlarged fold, (6) mucosal edema/swelling (fundic/pyloric mucosa), (7) red streak, (8) regular arrangement of collecting venules

H. pylori is the strongest known risk factor for gastric cancer, which is the second leading cause of cancer-related deaths worldwide.

Gastro-oesophageal reflux occurs in the majority of the population at varying frequencies and is commonly linked to symptoms such as heartburn, regurgitation, belching and difficulties with swallowing (dysphagia). Gastro-oesophageal reflux is the retrograde movement of stomach contents (gastric juice, food contents or gas) up the oesophagus and potentially beyond. Reflux may cause damage to the mucosal lining of the oesophagus and result in negative symptoms like heartburn. Reflux has also been suggested to be associated with a number of other disorders of the respiratory tract. In part, this may be mediated by the inappropriate opening or relaxation of the lower oesophageal sphincter, resulting in gastric contents passing up the oesophagus. Risk factors for gastro-oesophageal reflux include smoking, obesity, alcohol consumption, physical inactivity and dietary factors [8]. Previous studies also suggested that gastric distention by gas or liquid boluses could cause transient relaxation of the lower oesophageal sphincter which is likely to increase frequency of reflux episodes. Ingestion of carbonated beverage was associated with progression to gastro-oesophageal reflux disease and that the intake of carbonated beverages was associated with aggravation of reflux-related symptoms. The commonly used diagnostic tests to diagnose gastro-oesophageal reflux (e.g., manometry, impedance and pH monitoring) tend to be highly invasive. The concentration of pepsin in saliva ([pepsin]saliva) had previously suggested as a biomarker for gastro-oesophageal reflux.

A systematic review by Johnson et al. reported that the ingestion of carbonated beverages could possibly elicit acute reduction in intra-oesophageal pH and increased rate of transient, lower oesophageal sphincter relaxations but noted limited evidence of an association with reflux symptoms.

The effects of beverages with carbon dioxide on the gastrointestinal system mainly involve the upper digestive tract, with a possible influence on taste, a causal role on tooth erosion, gastroesophageal reflux and on the modifications of gastric physiology. The data in the literature, while suggesting a minor role of carbonated beverages on tooth erosion, do not show a direct role of carbonated beverages as determining factor of gastroesophageal reflux; rather the epidemiological studies available do not sustain a causal relationship between regular drinking of carbonated beverages and gastroesophageal reflux disease. Further research in this field may elucidate the possible role of carbon dioxide. The analysis of further observations, particularly on stomach physiology, shows that small volumes (300 ml) of carbonated beverages do not seem to influence the physiologic mechanisms, while greater volumes can modify the disposition of food in the stomach, producing satiety. Within this context, the ability of carbonated beverages to affect the feeling of

satiety needs to be further explored; indeed, it could be a useful method to limit food intake; on the other hand, a chemical effect related to carbon dioxide determines a slight increase in hydrochloric acid, which could influence positively the digestive process or worsen an acid related disease. Finally, an intriguing aspect is the role of carbon dioxide in sending gustatory signals to the central nervous system.

In conclusion there is now sufficient scientific evidence to understand the physiological impact of carbonated beverages on the gastrointestinal system, while providing a basis for further investigation on the related pathophysiological aspects.

Carbon dioxide is prevalently involved in the alteration of gastrointestinal physiology by a direct mucosal effect and indirect effects mediated by the mechanical pressure determined by gas. The role of sugar or artificial sweeteners is also debated as factors involved in the carcinogenic processes.

The chemical compounds in sugary drinks, such as 4-methylimidazole in drinks containing caramel colourings (defined as possibly carcinogenic to humans by the International Agency for Research on Cancer, IARC), pesticides in fruit juices, or artificial sweeteners such as aspartame might play a role in carcinogenesis.

An adulterant is a chemical substance which should not be contained within other substances (e.g. food, beverages, and fuels) for legal or other reasons. The addition of adulterants is called adulteration. Addition of toxic adulterants to food or other products for human consumption is known as poisoning.

Food adulteration is a social evil. It is an age-old problem of the very society. Adulteration consists of a large number of practices, e.g., mixing, substitution, concealing the quality, putting up decomposed foods for sale, misbranding or giving false labels and addition of toxicants. Food adulteration is a socio-economic crime, because mode of adulteration is harmful for human beings and source of profits is for business men who are involved in adulteration activities. The general public, traders and food inspectors are all responsible for perpetuating this evil- the public, because of lack of awareness of the dangers of adulteration and their general disinterest.

Food adulteration is a social evil and major problem of the every society. The disadvantages of Food Adulteration are more money for a foodstuff of lower quality and some forms of adulteration are injurious to health.

Vanaspatti is used as an adulterant for ghee. Ergot is used as an adulterant for cereals. Chalk-powder is used as an adulterant for flour. Chicory is used as an adulterant for coffee. Papaya seeds are used as an adulterant for pepper. Brick-powder is used as an adulterant for chilly powder. Tamarind seed powder is used as adulterant for coffee. Wood powder is adulterated for turmeric and dhaniya powder.

Green chilies, green peas and other vegetables: Here adulterant is Malachite Green (To accentuate the bright, glowing green colour of the vegetable). Argemone seeds (used to add bulk and weight) that it is a coloured dye that has proven to be carcinogenic for humans if consumed over a long period of time.

Turmeric, dals and pulses such as moong or channa: Here adulterant is Metanil Yellow and Kesari Dal (Added to enhance the yellow colour of a food substance). Its harmful effect is that it is highly carcinogenic and if consumed over a continuous period of time it can also cause stomach disorders.

Black pepper: Here adulterant is Papaya seeds (used to add bulk). Its harmful effect is that Papaya seeds can cause serious liver problems and stomach disorders.

FOOD ARTICLE	ADULTERANT	HARMFUL EFFECTS
Bengal Gram dhal & Thoor Dhal	Kesari dhal	larynx cancer
Tea	Used tea leaves processed and coloured	Liver Disorder
Coffee Powder	Tamarind seed, date seed powder	Diarrhoea
	Chicory powder	Stomach disorder, Giddiness and joint pain
Milk	Unhygienic water & Starch	Stomach disorder
Khoa	Starch & Less Fat content	Less - nutritive value
Wheat and other food grains (Bajra)	Ergot (a fungus containing poisonous substance)	Poisonous
Sugar	Chalk powder	Stomach - Disorder

Black powder	Papaya Seeds and light berrys	Stomach, liver problems
Mustard powder	Argemone seeds	Epidemic dropsy & Glucoma
Edible oils	Argemone oil	Loss of eyesight, heart diseases, tumour
	Mineral oil	Damage to liver,carcinogenic effects
	Karanja oil	Heart problems, liver damage
	Castor oil	Stomach problem
Asafoetida	Foreign resins galbanum, colophony resin	dysentery
Turmeric powder	Yellow aniline dyes	Carcinogenic
	Non-permitted colourants like metanil yellow	Highly Carcinogenic
	Tapioca starch	Stomach disorder
Chilli powder	Brick powder, saw dust	Stomach problems
	Artificial Colours	Cancer
Sweets, Juices, Jam	Non-permitted coaltar dye, (Metanil Yellow)	Metanil yellow is toxic and carcinogenic
Jaggery	Washing soda, chalkpowder	vomiting, diarrhoea
Pulses (Green peas and dhal)	coaltar dye	stomach pain, ulcer
Suapari	colour and saccharin	cancer
Honey	Molasses sugar (sugar plus water)	Stomach disorder
Carbonator water beverages	Aluminium leaves	Stomach Disorder
Cloves	Cloves from which volatile oil has been extracted	cheating waste of money

Dal

The most commonly adulterated dal is arhar dal and is usually adulterated with metanil yellow. Metanil yellow is a principal non-permitted food colour used extensively in India. The effect of long-term consumption of metanil yellow on the developing and adult brain causes neurotoxicity.

Neurotoxicity occurs when the exposure to natural or artificial toxic substances, alters the normal activity of the nervous system in such a way as to cause damage to the nervous tissue.

Metanil yellow is used in dal as an adulterant for colouring. Its presence can be tested in dal by adding a few drops of HCl to a test sample, if the solution turns pink in colour, it indicates the presence of metanil yellow.

Spices

Recently, a major Indian supplier was caught and had to destroy tons of turmeric for dangerous adulteration using metanil yellow and red oxide of lead - the later being highly carcinogenic.

Soap stone or other earthy material and foreign resinare the common adulterant used in Asafoetida. Papaya seeds, black berries are the common adulterant used in black pepper as they are almost similar in size but tasteless (sometimes bitter). Red chilli powder is adulterated with brick powder,salt powder or talc powder and artificial colours like Sudan Red.

Vegetables

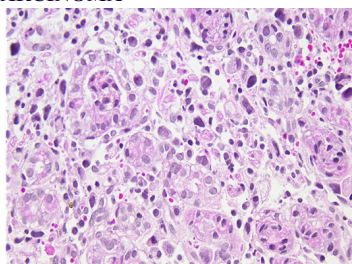
Beware of the shiny vegetables! Yes, adulteration of vegetables is in news for quite sometime now. Different coloured and textured vegetables are often coloured with different dyes and substances. These vegetables are mostly adulterated with malachite green, a chemical dye which is known to have carcinogenic.

Common adulterants in fruits and vegetables are oxytocin sachharin, wax, calcium carbide and copper sulphate.

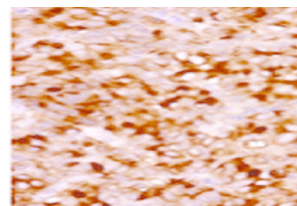
CONCLUSION

In conclusion in correct food habits not only influence the gastric problems but also lead to gastric malignancies even in younger patients . so we have to take precautions and also limit the intake of food with adulterated food stuffs which is more common in restaurant made food and also we have to limit the combination of taking beverages with spicy restaurant and spicy home made food. Precautions of FSSAI also should be followed and necessary steps should be taken to prevent adulteration

GASTRIC CARCINOMA



CD 133 POSITIVE



H.pylori Positive in gastric mucosal biopsy

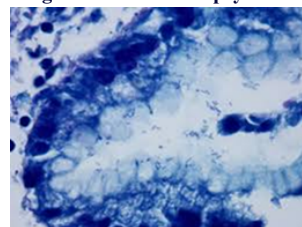
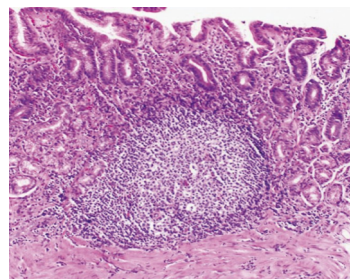


Figure 1

PSEUDOLYMPHOMA IN GASTRIC BIOPSY



REFERENCES

1. M. Naylor, T. Gotoda, M. Dixon et al., "Why does Japan have a high incidence of gastric cancer? Comparison of gastritis between UK and Japanese patients," Gut, vol. 55, no. 11, pp. 1545–1552, 2006. View at Publisher • View at Google Scholar • View at Scopus
2. J. V. Joossens, M. J. Hill, P. Elliott et al., "Dietary salt, nitrate and stomach cancer mortality in 24 countries," International Journal of Epidemiology, vol. 25, no. 3, pp. 494–504, 1996. View at Publisher • View at Google Scholar • View at Scopus
3. E. M. El-Omar, "The importance of interleukin 1 β in Helicobacter pylori associated disease," Gut, vol. 48, no. 6, pp. 743–747, 2001. View at Publisher • View at Google Scholar • View at Scopus
4. J. C. Machado, C. Figueiredo, P. Canedo et al., "A proinflammatory genetic profile increases the risk for chronic atrophic gastritis and gastric carcinoma," Gastroenterology, vol. 125, no. 2, pp. 364–371, 2003. View at Publisher • View at Google Scholar • View at Scopus
5. J. Watari, N. Chen, P. S. Amenta et al., "Helicobacter pylori associated chronic gastritis, clinical syndromes, precancerous lesions, and pathogenesis of gastric cancer development," World Journal of Gastroenterology, vol. 20, no. 18, pp. 5461–5473, 2014. View at Publisher • View at Google Scholar • View at Scopus
6. M. F. Dixon, R. M. Genta, J. H. Yardley, and P. Correa, "Classification and grading of gastritis. The updated Sydney system. International Workshop on the Histopathology of Gastritis, Houston 1994," The American Journal of Surgical Pathology, vol. 20, no. 10, pp. 1161–1181, 1996. View at Google Scholar
7. Indian Constitution, The Prevention Food Adulteration Act. 1954
8. The Prevention of Food Adulteration Act & Rules (as on 1.10.2004).
9. Dent, J.; El-Serag, H.; Wallander, M.A.; Johansson, S. Epidemiology of gastro-oesophageal reflux disease:
10. A systematic review. Gut 2005, 54, 710–717. [CrossRef] [PubMed].