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Malignancies of the gastrointestinal tract – an overview

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ABSTRACT

Background: Gastrointestinal tract (GI tract) is a dynamic organ owing to its anatomy and function. The upper GI and lower GI are considered separately when dealing with various lesions that occur therein. A wide variety of non-malignant and malignant lesions with various clinical and prognostic outcomes can occur throughout the GI tract. In this study, we aim to analyze and delve into the details of the various malignancies that were encountered throughout the GI tract in our institution. **Materials & Method:** The present work is a cross-sectional and analytical type of study conducted in the department of Pathology in a tertiary care rural hospital over a period of one year (Jan 2014 to Dec 2014). All malignant cases which were confirmed on histopathology were studied. Detailed clinical and radiological history was obtained. All the data was then further analysed. **Result:** A total of 263 cases of lesions of the GI tract were received. Of these, 65 (24.71%) cases were malignant, whereas 198 (75.29%) cases were non-malignant. Male: Female ratio was 1.9:1. Mean age across all the lesions was 49.1 years. Most commonly affected site was oral cavity with 35 (53.85%) cases followed by large intestine with 14 (21.54%) cases. Squamous cell carcinoma was the most frequent malignancy encountered. **Conclusion:** GI tract can give rise to various malignancies affecting any part and span across a age group Squamous cell carcinoma was the most commonly encountered malignancy followed by adenocarcinoma. The incidence of malignancies is on a rise in India as observed in our study. Accurate diagnosis of these malignancies is very important as treatment for various malignancies varies.

Key words: Gastrointestinal tract, malignant, Squamous cell carcinoma

Introduction

Gastrointestinal tract (GIT) extends from the oral cavity and includes the oesophagus, stomach, small and large intestine and anal canal. The upper GI tract encompasses the oral cavity, oesophagus up to the duodenum with the exact demarcation between upper and lower tracts being the suspensory muscle of duodenum which also is the embryonic border between forgut and midgut. The lower gastrointestinal tract extends from the distal part of duodenum to anus. Both the upper and lower GI tract can be affected by a variety of pathological conditions including malignancies which have high morbidity and mortality.[1] The GI tract being a hollow organ, flexible endoscopy which was introduced in 1968 can successfully be used therein both diagnostically as well as therapeutically.[1] Orally, squamous cell carcinoma is the most common oral malignancy representing up to 80 to 90% of all the malignancies of the oral cavity.[2] Leukoplakia is a pre-malignant condition which precedes squamous cell carcinoma. Clinically, it presents as white and red patches, red being termed as erythroplakia.[3] Smoking, chewing of pan and tobacco smoking or chewing have been shown to have a casual effect in squamous cell carcinoma.[4] The oesophagus is a potential site for malignancies, squamous cell carcinoma, adenocarcinoma, muco epidermoid carcinoma, leiomyoma, gastrointestinal stromal tumor and malignant melanoma to name a few.[5,6] Cancer of the oesophagus is one of the common malignancies in India with the incidence of the SCC being more than adenocarcinoma.[7] However, the incidence of oesophageal adeno carcinoma is increasing in India as well as other countries such as the US.[8] The lower GI tract

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comprising of the large intestine and anal canal is a site for a broad range of neoplastic conditions having variable implications. Amongst the various tumors that can occur especially in the colorectum, epithelial tumors of which adenocarcinomas are the most the common malignancies. The other malignancies which can occur include neuroendocrine tumors, primary squamous cell carcinoma and malignant melanoma of the anal canal.[9] Detection of polyps in the large intestine for that matter anywhere in the GI tract is a common occurrence. Majority of the colorectal polyps are adenomatous and hyperplastic. The other less common polyps being inflammatory and hamartomatous.[10,11]. We as pathologists receive endoscopic biopsies, polypectomy specimen and various resections. Meticulous grossing and macroscopic evaluation has been the gold standard in the diagnosis of the various malignancies throughout the GI. The same is expected in an institution where a multispecialty approach is ideally employed in treating malignancies particularly the GI tract which includes anatomical pathology.

Materials and method

The present study was conducted in the department of Pathology of a tertiary care rural hospital, over a period of one year (Jan 2014 to Dec 2014). All clinically diagnosed malignant cases which were confirmed on histopathology were studied. Detailed clinical and radiological history was obtained to aid the diagnosis. All the data was then further analysed.The present work is a descriptive, cross sectional and analytical type of study. All endoscopic biopsies, polypectomy specimen, resected specimens and slides for review were studied. The lesions from the oral cavity (excluding the nasopharynx), oesophagus, stomach, duodenum, ileum, caecum, all the parts of colon, rectum and anal canal were included in the analysis. All non-malignant lesions were excluded from this study.The resected specimens and polypectomy specimen were fixed according to standard protocols. Appropriate and adequate sections were taken so as to cover the entire specimen. Lymph nodes wherever possible were resected. All endoscopic biopsies were submitted directly for processing. All the sections were processed under standard guidelines and were stained with hematoxylin and eosin stain and studied under light microscopy. The demographic details, clinical and radiological investigations were obtained from the requisition form, treating physicians and patient file. All the data were statistically analyzed and studied.

Results

A total of 263 cases were received in the one year period. Of these, 198 cases (75.29%) were non-malignant whereas, 65 (24.71%) cases were malignant. Oral cavity was the most frequently affected with 35 (53.85%) of the 65 cases.(Table 1) Within the oral cavity, the buccal mucosa was the most favoured site with 17 (48.57%) cases followed by the tongue with 07(20%) cases.(Table 2) Floor of the mouth and palate had an almost equal incidence with 06 and 05 cases respectively. All the 35 cases were squamous cell carcinoma. 09 cases showed esophageal malignancy in our study of which 06 (66.66%) were squamous cell carcinomas whereas 03 (33.33%) cases were adenocarcinoma. The middle 1/3 of the esophagus was the most frequently affected with 04 (44.44%) cases whereas least affected was the upper 1/3 with 02 (22.22%) cases. We came across 03 (4.62%) cases of gastric adenocarcinoma. 02 (66.66%) cases were in the pyloric region whereas 01 case was from the body. (Table 1)

Table 1: Distribution of lesions according to site and diagnosis

Site	Diagnosis			Total
	Squamous cell carcinoma	Adenocarcinoma	Neuroendocrine	
Oral cavity	35	00	00	35
Oesophagus	06	03	00	09
Stomach	00	03	00	03
Appendix	00	00	01	01
Small Intestine	00	02	01	03
Large Intestine	00	14	00	14

One case of neuroendocrine tumor was encountered in an appendicectomy specimen while another case of neuroendocrine tumor was seen in the ileum in our study. One case of each adenocarcinoma encountered in the 2nd part of the duodenum and ileum.(Table 1).The large intestine showed 14 cases of malignancies.

Most commonly affected was the colon with 07 (50%) cases followed by the rectum with 04 (28.57%) cases.(Table 2) We came across 03 polypectomy specimen. One was diagnosed as tubulovillous adenoma showing areas of invasion. Another polyp was diagnosed as well differentiated adenocarcinoma while a single case of serrated adenoma with focal areas of well differentiated adenocarcinoma was noted.

Table 2 : Distribution of cases according to site

Upper GI (47)	Oral	Buccal mucosa	17
		Floor of the mouth	06
		Palate	05
		Tongue	07
	Oesophagus	Upper1/3	02
		Middle 1/3	04
		Lower 1/3	03
	Stomach	Pylorus	02
		Body	01
	Small intestine	Duodenum	01
		Jejunum	00
		Ileum	02
Lower GI (18)	Large intestine	Appendix	01
		Caecum	02
		Colon	07
		Rectum	04
		Anal canal	01

When analyzed, well differentiated malignancies were most frequently encountered with 35 (55.56%) cases followed by moderately differentiated tumors with 26 (41.27%) cases. There were two (3.17%) cases of poorly differentiated malignancies.(Table 3)

Table 3 : Grade wise distribution of malignancies

Grade	Oral	Oesophagus	Stomach	Appendix	Small intestine	Large intestine	Total
Well differentiated	21	04	01	00	01	08	35
Moderately differentiated	13	05	02	00	01	05	26
Poorly differentiated	01	00	00	00	00	01	02
Total (63)	35	09	03	00	02	14	63

In our study, out of 65 cases, majority were males with 43(66.15%) cases followed by 22 (33.85%) females cases. A male to female ratio of 1.9:1 was observed. The most commonly affected age group was clustered from 41-60 years with 25 (38.46%) cases followed by 24 (36.92%) cases in the 61-70 years of age group. The mean age affected across all lesions was 49.1 years when analyzed individually. The oldest age group affected large intestine with the mean age affected being 63.2 years followed by the oesophagus with the mean age affected being 59.7 years. (Table 4)

Table 4 : Distribution of malignancies according to age and sex

Age (years)	Oral cavity	Oesophagus	Stomach	Appendix	Small Intestine	Large Intestine
<20	00	00	01	00	00	00
21-30	00	02	00	01	01	00
31-40	03	00	00	00	00	02
41-50	11	01	00	00	01	00
51-60	09	00	00	00	01	02

61-70	11	04	01	00	00	08
71-80	01	01	01	00	00	02
>80	00	01	00	00	00	00
Total	35	09	03	01	03	14
Male	23	04	03	01	01	11
Female	12	05	00	00	02	03
M:F				1.9:1		
Mean age(years)	54.1	59.7	52.7	21.0	43.7	63.2
Mean age(years)				49.1		

We studied the clinical presentations of all the 65 malignant cases. We came across various symptoms depending upon the site. Whitish patches were noted in 19 cases, while growth with or without ulceration was noted in 16 cases of oral lesions. Epigastric pain was noted in 06 (12.76%) cases whereas epigastric pain with dysphasia and epigastric pain with malena was seen in 04 (8.51%) and 02 (4.26%) cases respectively. All the above mentioned symptoms were seen in upper GI malignancies. The lower GI symptomatology however presented predominantly as bleeding per rectum with constipation and/or diarrhea, change in bowel habits. The most frequent symptom encountered was change in bowel habits seen in 10 (55.55%) cases. (Table 5)

Table 5 : Distribution of cases according to clinical presentation

Upper GIT (47)	**Whitish patches (with or without ulcer)**	**19**
	Growth	16
	Epigastric pain	06
	Epigastric pain with dysphagia	04
	Epigastric pain with malena	02
Lower GIT (18)	Change in bowel habits	10
	PR bleed	04
	PR bleed with constipation	03
	PR bleed with diarrhea	01

*PR- per rectal, GIT- Gastrointestinal Tract

Of the 65 cases, 12 were lost to follow up. Depending on the individual site, patients were subjected to postoperative chemotherapy and/or radiotherapy. At the time of last follow up, 49 (92.45%) patients were alive.

Discussion

Upper GI tract is one of the most frequently affected regions by malignant tumors. Worldwide, gastric adenocarcinoma and malignancies of the esophagus are among the leading causes of morbidity and mortality.[12, 13] According to National Cancer Registry, esophageal malignancies rank third in women after malignancies of the breast and cervix.[14] Our study showed a male preponderance with M:F ratio of 1.9:1. This was in agreement with Shennak et al.[15]Squamous cell carcinoma (SCC) is the most common epithelial tumor presenting in the oral cavity.[2] Unlike majority of the malignancies, a causal association has been established between tobacco chewing, betel nut chewing ,smoking and SCC. [4]We, in our study, came across 35 cases of SCC of oral cavity of which 19 cases presented with whitish patch with or without ulceration denoting leukoplakia and/or erythroplakia. Remaining 16 cases presented with growth in the oral cavity. Detailed clinical history revealed majority of the patients to be addicted to either betel quid, tobacco chewing or smoking. Studies done by Sharma et al, Ayesha et al and Akhtar et al revealed the most common site within the oral cavity to be the buccal mucosa.[16,17,18] However, studies such as Farnaz et al found the most common site involved to be the tongue. [19] Our study showed buccal mucosa to be the most commonly involved site followed by tongue. The most commonly affected age group was 51-70 years with mean age of presentation being 54.1 years. Our study was in concordance with findings of

Doshi et al and Janaine et al.[20,21]All three adenocarcinoma were seen in the lower 1/3rd of the esophagus which is in agreement with existing literature.[22,23]. All 03 cases of gastric adenocarcinoma were males in our study with majority of the patients seen in 61-80 years age group. Our findings were in concordance with Pavithran et al.[24] Epigastric pain was the predominant symptom encountered in gastric patients in our study. Our findings were in agreement with other studies.[25,26] The pylorus was predominantly affected as seen in our study which again showed concordance with other studies.[27]Malignancy of the colorectal is seen predominantly in the industrialized and western countries with adenocarcinoma considered as the most common malignancy. In our study, of the 14 (21.54%) cases, majority of the lesions were noted in 61-70 years age group with mean age of 63.2 years. Males were predominantly affected with 11 out of the 14 cases. Well differentiated adenocarcinoma was seen in 08 (57.14%) cases, followed by 05 (42.86%) cases of moderately differentiated adenocarcinoma and 01 case of poorly differentiated carcinoma. Our study was in agreement with other studies such as Laishram et al.[28,29]Primary SCC and malignant melanoma are the tumors seen predominantly in the anal canal. We however, came across a single case of polyp at the junction of rectum and anal canal which on microscopy showed high grade tubulovillous adenoadenoma with focal invasion.02 other adenomatous polyps which also had invasive features were noted in our study. Studies done by Tony J et al showed adenomatous polyps as the most common type seen in the large intestine.[30]
Treatment of all the GI malignancies comprises of resection and chemotherapy and/or radiotherapy. Recently neo-adjuvant therapy is also been administered in large intestinal as well as other malignancies showing positive response. However, accurate light microscopic diagnosis remains the gold standard in the diagnosis of GI malignancies.

Conclusion

The oral cavity is more exposed to abuse as a result of addiction and hence more cases of malignancies are being encountered therein. The large intestine, however, holds its place as one of the primary sites of the GI to be affected by malignancies. Older age groups and male gender is at higher risk when considering GI malignancies in general. Early detection by endoscopic surveillance should be highly encouraged for early detection of these malignancies. Early detection and accurate histopathological evaluation however remain the cornerstone in enhancing the diagnosis, therapy and prognosis of the patient.

References

1. Sheikh BA, Hamdani SM, Malik R. Histopathological spectrum of lesions of upper gastrointestinal tract: a study of endoscopic biopsies. Global J Med Public Health. 2015;4(4):1–8.
2. Angela CC. Epithelial Pathology.In: Oral and Maxillofacial Pathology.3rd ed. Philadelphia: Saunders,Elsevier Inc ,418-19.
3. Brad WN, Terry A. Oral Cancer and Precancerous Lesions.CA Cancer J Clin;52:195-15.
4. Abdul HS, Taqi M, Ttazeen R. Evaluating the correlation between histopathological patterns of oral squamous cell carcinoma,age & site. Pakistan Oral Dental J;35:30-2.
5. Rosai J. Esophagus. In: Rosai and Ackermann's Pathology. 9th ed Mosby. 615-647.
6. Chapter 1, Tumors of Oesophagus. Hamilton SR and Aaltonen LA eds, WHO Classification of tumors. Pathology and genetics, Tumor of the digestive system. Lyon: IARC press. 2000:10-30.
7. Desai BP, Borjes JI, Vohra GV, et al. Carcinoma of the esophagus in India. Cancer 1969;23:979-89.
8. John MD, Lucky HK, herfman RM. National Cancer data base report on esophageal carcinoma. Cancer 1996;78:1920-28.
9. Sulegaon R, Shete S, Kulkarni D. Histological Spectrum of Large Intestinal Lesions with Clinicopathological Correlation. Journal of Clinical and Diagnostic Research. 2015 Nov, Vol-9(11): EC30-EC34.
10. Geramizadeh B, Jahromi MK. Pathology of Colorectal Polyps: A Study from South of Iran. Ann Colorectal Res 2013; 1: 59-61.
11. Odze RD, Goldblum JR. Surgical pathology of the GI tract, liver, biliary tract, and pancreas. 2009.
12. Zhang XF, Huang CM, Lu HS, Wu XY, Wang C, Guang GX, et al.; Surgical treatment and prognosis of gastric cancer in 2613 patients. World Journal of Gastroenterology, 2004; 10: 3405-3408.
13. Enzinger PC, Mayer RJ; Esophageal cancer. The New England Journal of Medicine, 2003; 349: 2241-2252.
14. National Cancer Registry Programme. First All India Report 2001-2002. Vol 1. Indian Council of Medical Research. Bangalore, India. 2004.
15. Shennak MM, Tarawneh MS, Al-Sheik; Upper gastrointestinal diseases in symptomatic Jordanians: A prospective endoscopic study.

16. Sharma P, Saxena S, Aggarwal P.Trends in the epidemiology of oral squamous cell carcinoma in Western UP, IJDR,2010; 21:316-9.
17. Ayesha Z, Nagi AH, Nadia N. A clinicopathological study of orofacial squamous cell carcinoma in local population. Biomedica,2013; 29:147-50.
18. Mohd. AK, Mohd. Y, Mohd. YH, et al. Clinicopathological Study of Oral carcinoma. Bangladesh J Otorhinolaryngol, 2014;20:15-19.
19. Farnaz F, Zohreh D, Atessa P, et al . Clinical and histopathological analysis of oral Squamous cell carcinoma of young patients in Mashhad, Iran: A retrospective study and review of literatures. Med Oral Patol Oral Cir Bucal,2011; 16: 473-7.
20. Doshi NP, Shah SA, Patel KB, et al. Histological grading of oral cancer: A comparison of different systems and their relation to lymph node metastasis. National J Community Med, 2011;2:136-42.
21. Janaina AM, Alessandro LC, Cassiano FWN. Clinical and histopathological evidence of oral squamous cell carcinoma in young patients: Systematized review. J Bras Patol Med Lab; 50: 67-74.
22. GalandiukS, Herman RE,Gassman J. Cancer of oesophagus. Annals of Surgery.1986;203:101 – 8.
23. Wang HH,Antonioli DA. Comparative features of oesophageal and gastric adenocarcinomas. Human Pathol;17:482 – 7.
24. Pavithran K, Doval DC, Pandey KK. Gastric cancer in India. Gastric Cancer. 2002;5:240-3.
25. Chattopadhyay SD, Singhamahapatra RK, Biswas RS, Sengupta TK, Bandopadhyay A, Nath NC. Prevalence of carcinoma stomach in a tertiary referral centre in Eastern India and its correlation with endoscopic findings. J Indian Med Assoc.2011;109:336-8.
26. Mayer RJ. Gastrointestinal tract cancer. In: Anthony S, Faucis. Harrison′s Principle of Internal Medicine. 14 th ed. vol 1. 1998. p. 568-78.
27. Suvarna N, Sasidharan VP. Histopathological and histogenetic study of carcinoma stomach in a high-risk area. Indian J Cancer 1995;32:36-42.
28. Laishram RS, Kaiho N, Shimray R, Devi SB, Punyabati P, Sharma DC. Histopathological Evaluation of Colorectal Carcinomas status in Manipur, India. International Journal of Pathology. 2010; 8(1): 5-8.
29. Shyamal Kumar Halder et al. Epidemiological, Clinico-Pathological Profile and Management of Colorectal Carcinoma in a Tertiary Referral Center of Eastern India. JKIMSU.2013; 2(1): 45-50.
30. Tony J, Harish K, Ramachandran TM, Sunilkumar K, Thomas V. Profile of colonic polyps in a southern Indian population. Indian J Gastroenterol. 2007;26(3):127-29.

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