

# Correlation between Clinical Features, Endoscopic Findings and Histopathological Characteristics in Various Esophageal Lesions-A study of 200 Cases.

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Received: May 2016

Accepted: May 2016

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## ABSTRACT

**Background:** The present study analyzed the correlation between clinical features, endoscopic findings and histopathological findings in esophageal lesions. **Methods:** A sample size of 200 patients was taken in the study conducted in Department of Pathology. Data for patient's age, gender, clinical features (dysphagia, pain epigastrium, regurgitation, loss of weight, loss of appetite), site of biopsy (upper, middle and lower one third of esophagus), endoscopic appearance (erythema, ulceration, nodular and stricture) were analysed. **Results:** Frequency of various esophageal lesions both benign and malignant (esophagitis, benign lesions, dysplasia, Barrett's esophagus, SCC-WD, SCC-MD, adenocarcinoma) was calculated in the study group. Finally, correlations were established between age, gender, above mentioned clinical features, endoscopic findings and final histopathological diagnosis of various esophageal lesions. It was concluded that GERD was the most common esophageal lesion and SCC was the commonest malignancy in our region, being more common in men, in old age group (41-60 years). SCC involved the middle esophagus while GERD, BE and adenocarcinoma involved the lower esophagus more commonly. A statically significant correlation was found between dysphagia, loss of weight and esophageal carcinoma. **Conclusion:** It was concluded that gastro-esophageal Reflux disease was the most common esophageal lesion and Squamous Cell Carcinoma was histopathologically the commonest esophageal malignancy in our region, being more common in men in the old age group (41-60 yrs).

**Keywords:** Squamous Cell Carcinoma, Gastro Esophageal Reflux Disease, Barrett's Esophagus.

## INTRODUCTION

The esophagus can be affected by a number of lesions varying from highly lethal cancers to the persistent 'heart burn' that can be chronic and incapacitating or merely an occasional discomfort or asymptomatic.<sup>[1]</sup>The present study will correlate the clinical features, endoscopic findings and Histopathologic diagnosis of the type of esophageal lesions. It also aims to have a statistical evaluation of the results especially accuracy and attempt to find pitfalls in the study and compare the results with various others studies.

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## MATERIALS AND METHODS

The present study analysed the correlation between clinical features, endoscopic findings and

histopathological findings in esophageal lesions. A sample size of 200 patients was taken in the present study. The esophageal biopsies were taken from the suspicious lesions by the endoscopy ward and received by the Department of Pathology for histopathological diagnosis. A detailed proforma was duly completed for each case and patient consent was taken. The proforma included information on the age, gender, history of dysphagia, pain epigastrium, regurgitation, loss of weight and appetite, family history, dietary habits (intake of hot spicy foods), smoking and alcohol status, other relevant investigation reports, site of biopsy and endoscopic findings.

All the biopsies received were placed in 10% formalin and allowed to fix for at least 4 hours in 10% formalin. Then, after grossing and processing biopsies in histokinette, FFPE (formalin-fixed, paraffin embedded) blocks were made. 4 µm sections were cut from the FFPE blocks on the Leica microtome: model no. RM2265 [Figure 3] stained with routine Haematoxylin and Eosin Stain.

### Statistical Analysis

Data for patient's age, gender, clinical features (dysphagia, pain epigastrium, regurgitation, loss of weight, loss of appetite), site of biopsy (upper, middle and lower one third of esophagus), endoscopic appearance (erythema, ulceration, nodular and stricture) were analysed. Frequency of various esophageal lesions both benign and malignant (esophagitis, benign lesions, dysplasia, Barrett's esophagus, SCC-WD, SCC-MD, adenocarcinoma) was calculated in the study group. Further classification of esophageal carcinoma was done along with grading of esophageal squamous cell carcinoma into well differentiated, moderately differentiated and poorly differentiated tumors and their frequency was analysed.

Finally correlations were established between age, gender, above mentioned clinical features, endoscopic findings and final histopathological diagnosis of various esophageal lesions.

Chi-squared test was used to determine the statistical significance between clinical features, endoscopic findings, histopathological types and histopathological grade. A p-value of <0.05 was considered statistically significant. All p-values calculated were two sided.

## RESULTS

The mean age of the patients with esophageal lesions was 56.29 years and the highest numbers of patients were in the age group of 41-60 years. The number of male patients in the present study was 120 (60%) and number of female patients was 80 (40%). The male: female ratio in the present study for all the patients undergoing UGIE biopsies for various esophageal lesions was 1.5: 1.

The most common clinical feature in patients with esophageal lesions was dysphagia. It was present in 149 (74.5%) patients and absent in 51 (25.5%) patients.

It was observed that out of the total 83 patients with esophageal carcinoma, 81 patients had dysphagia. Hence, dysphagia was present in 97.5% of the cases of esophageal carcinoma. Pain epigastrium was observed in 125 (62.5%) patients with esophageal lesions thus making it second most common esophageal symptoms after dysphagia. It was absent in 75 (37.5%) patients. Regurgitation was another important clinical feature present in 123 (61.5%) patients with esophageal lesions while it was absent in 77 (38.5%) patients. Loss of weight was present in 140 (70%) patients with esophageal lesions and it was absent in 60 (30%) of the patients. Loss of appetite was present in 141 (70.5%) patients with esophageal lesions and it was absent in 59(29.5%) patients.

History of tobacco intake was present in 99 (49.5%) patients, history of alcohol intake was present in 91(45.5%) and history of intake of hot, spicy food was present in 110 (55%) patients presenting with various esophageal lesions.

It was observed that most common site of esophageal lesions was middle esophagus involved in 90 (45%) patients, followed by lower esophagus in 74 (37%) patients and upper esophagus in 36 (18%) patients. Various endoscopic appearances on UGIE were erythema, ulcerative lesions, nodular lesions and strictures. Some of the esophageal lesions have more than two types of endoscopic appearances. It was observed that erythema was present in 44 (22%), ulcerative lesions were present in 41 (20.5%), nodular lesions were present in 90 (45%) and stricture were present in 79 (39.5%) of the various esophageal lesions [Table 1].

**Table 1:** Endoscopic Appearance of Different Esophageal Lesions

	Erythema	Ulcerative	Nodular	Stricture
Present	44 (22%)	41 (20.5%)	90 (45%)	79 (39.5%)
Absent	156 (78%)	159 (79.5%)	111 (55.5%)	121 (60.5%)

It was found that out of the total 200 patients in whom UGIE was performed, 8(4%) cases had no specific diagnosis, 85(42.5%) patients were of esophagitis, 1(0.5%) case was of benign esophageal lesion. 8(4%) cases were of Barrett's esophagus, 15(7.5%) cases were of dysplasia, 37(18.5%) patients were of SCC-WD, 41(20.5%) cases were of SCC-MD, 5(2.5%) cases were of adenocarcinoma.

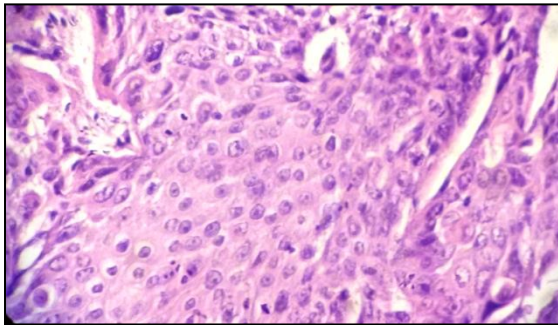
Histopathologically, esophagitis (Gastro-esophageal reflux disease) was the most common esophageal lesion found in 85 (42.5%) of 200 UGIE biopsies. Esophageal carcinoma was the second most common esophageal lesion found in 83(41.5 %) cases. Of the various esophageal carcinomas, SCC-

MD was found to be the commonest found in 41(20.5%) cases [Figure 1]. SCC-WD was found in 37 (18.5%) cases and adenocarcinoma was found in 5 (2.5%) cases [Figure 2]. Barrett's esophagus was found in 8 (4%) of the cases. Dysplasia was found in 15 (7.5%) of the cases. One benign lesion (Papilloma) was found. 8 cases with no specific diagnosis were also reported.

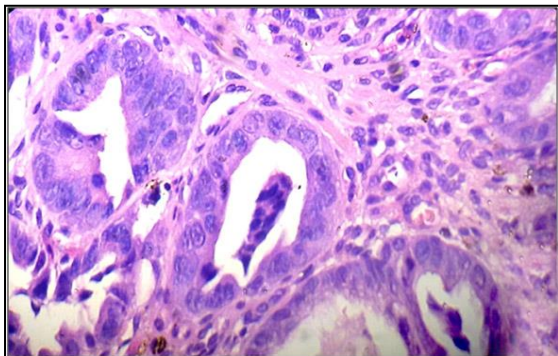
## DISCUSSION

This study was hospital based prospective observational study conducted in the Department of Pathology. The study was conducted from August 2013 to September 2015 and it comprised of

histopathological diagnosis of 200 upper gastrointestinal endoscopic biopsies to establish a correlation between clinical features, endoscopic findings and histopathological diagnosis.



**Figure 1:** Photomicrograph showing Squamous Cell Carcinoma- Moderately Differentiated. Sheets of malignant epithelial cells exhibiting increased nucleocytoplasmic ratio, pleomorphism, variable amount of eosinophilic cytoplasm and atypical mitotic figures also seen. (H&E 400X).



**Figure 2:** Photomicrograph showing Adenocarcinoma Esophagus. Well formed glands lined by malignant epithelial cell exhibiting increased nucleocytoplasmic ratio, pleomorphism, vesicular nuclei with prominent nucleoli (H&E 400X).

Total number of esophageal cancers reported during the period of study (August, 2013 till September 2015) were 83. In this period total number of UGIE guided biopsies were 1413. So the percentage of esophageal cancers out of total UGIE biopsies was 5.8 %.. Dia et al<sup>[2]</sup> (2011) in a study on esophageal cancer observed that esophageal cancer accounted for 0.97 % of upper digestive tract endoscopy procedures performed. The reason for such high percentage of esophageal cancer in our study can be due to the fact that our's (where this study was conducted) is a referral institute and we are getting high number of suspected esophageal cancer patients.

The average age for the carcinoma of esophagus in the present study was 58.75 years. This figure is comparable to that of the average age studied by Khan et al<sup>[3]</sup> and Paymaster et al<sup>[4]</sup>. According to JC Paymaster et al<sup>[4]</sup> (1968), this gender ratio favouring males could be due to the fact that males

are exposed to more risk factors than females and gastrointestinal malignancies are more common in males.

In our study, dysphagia was the main presenting complaint in 97.5% of cancer patients. Out of total 83 patients with esophageal carcinoma, 81 had dysphagia. Hence, there was a significant correlation between esophageal carcinoma and dysphagia (p-value < 0.001). This finding is in conformity with the findings of Roohullah et al<sup>[5]</sup> (2001) and Kuwano et al<sup>[6]</sup> (2003). Wakhisi et al<sup>[7]</sup> (2005) reported that dysphagia and weight loss were the most common presenting symptoms, in keeping with a wide series of published reports. In fact, weight loss combined with dysphagia was always pathognomic of this cancer. Roohullah et al<sup>[5]</sup> (2001) in a retrospective study of 659 patients of Carcinoma esophagus, recommended that all cases of dysphagia should be thoroughly investigated with the suspicion of carcinoma esophagus.. Dysphagia was found in 97.3% of the SCC-WD cases, 100% of SCC-MD cases and 80% of Adenocarcinoma cases in the present study. Out of total 83 patients with esophageal carcinoma, 81 had dysphagia. Hence there was a significant correlation between esophageal carcinoma and dysphagia (p-value < 0.001).

Pain epigastrium was present in 125 (62.5%) cases with esophageal lesions. It was found in 86.5% SCC-WD cases, 97.6% in SCC-MD cases and 80% of adenocarcinoma cases. Hence pain epigastrium has a significant correlation with carcinoma esophagus (p-value < 0.001).

Loss of weight was found in 70 % cases of the various lesions. It was found in 83.8% of the SCC-WD cases, 92.7% of SCC-MD cases and 80% of adenocarcinoma. Hence a significant correlation was found between loss of weight and esophageal carcinoma (p-value < 0.001).

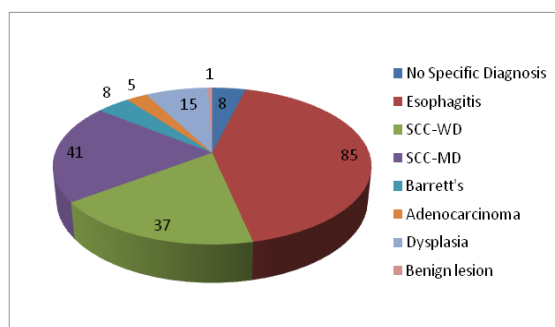
Loss of appetite was present in 70.5% of the cases with esophageal lesions. It was found in 83.8% of the SCC-WD cases, 83.8% of the SCC-MD cases and 100% of adenocarcinoma cases thus showed a significant correlation between loss of appetite and esophageal carcinoma (p-value<0.001).

Tobacco, alcohol and hot spicy food intake was found in significant number of cases with esophageal lesions particularly carcinoma. History of tobacco intake was found in 42 patients with esophagitis, 14 patients with SCC-WD, 25 patients of SCC-MD and 4 patients of adenocarcinoma. Alcohol intake was observed in 40 patients with esophagitis, 12 patients with SCC-WD, 22 patients with SCC-MD and 3 patients with adenocarcinoma. Hot, spicy food intake was found in 26 patients of esophagitis, 33 patients of SCC-WD, 40 patients of SCC-MD and 3 patients of adenocarcinoma. Alidina et al<sup>[8]</sup> (2004) stated that tobacco use is strongly associated with esophageal cancer. Smoking increases the risk of developing

squamous cell carcinoma of the esophagus by 5-10 folds and of developing adenocarcinoma by 2 fold. Molecular changes including p53 mutation with smoking heralds development of malignancy. Alcohol has additive and perhaps synergistic effect, where the risk increases to as high as 10 folds.<sup>19</sup>. Vomiting and chest pain were also very common presenting complaints.

In patients of esophageal squamous cell carcinoma, most common site was middle one-third (65%) followed by lower one-third (19.3%) and upper one-third (15.7 %). However, all the patients of adenocarcinoma were from lower one third of the esophagus. In comparison to other case series, our localization of tumors is consistent with the findings of Mandard et al<sup>[10]</sup>(1981) .

Out of 200 cases reviewed, there were 85 cases of esophagitis, 83 malignant lesions, 8 cases of Barrett's esophagus, 15 cases of dysplasia, 1 benign lesion and 8 cases were of no specific diagnosis [Figure 3].



**Figure 3:** Frequency of different Histopathological Diagnosis

All the tumors in the present study have been classified histologically in accordance with the WHO. In 83 malignant lesions, 78 cases were of SCC and 5 cases of adenocarcinoma. Hence, according to our study, 94% esophageal tumors were of SCC while 6% were Adenocarcinoma. Our results are in agreement with other Indian and International studies where SCC was reported as the commonest followed by Adenocarcinoma. In the present study, out of 78 SCC cases, 37 cases were of well-differentiated and 41 cases were of moderately differentiated grade. This is comparable to a similar study by Bhagyalakshmi et al<sup>[11]</sup> (2014) where moderately differentiated squamous cell carcinoma was found to be commonest .

## CONCLUSION

It was concluded that gastro-esophageal Reflux disease was the most common esophageal lesion and Squamous Cell Carcinoma was histopathologically the commonest esophageal malignancy in our region, being more common in men in the old age group (41-60 yrs). Dysphagia

and loss of weight should be considered pathognomic of esophageal carcinoma and all cases with dysphagia should be further investigated for esophageal carcinoma. Squamous Cell Carcinoma involves the middle esophagus commonly. Gastro-esophageal Reflux disease, Barrett's esophagus and Adenocarcinoma involve the lower esophagus most commonly.

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**How to cite this article:** Geetanjali, Kundal RK, Bhagat AK, Singh H. Correlation between Clinical Features, Endoscopic Findings and Histopathological Characteristics in Various Esophageal Lesions-A study of 200 Cases. Ann. Int. Med. Den. Res. 2016;2(4):102-5.

**Source of Support:** Nil, **Conflict of Interest:** None declared