



Original Research Article

Spectrum of esophageal lesions- A study of endoscopic biopsies

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ARTICLE INFO

Article history:

Received 12-05-2021

Accepted 26-05-2021

Available online 14-06-2021

Keywords:

Chronic nonspecific esophagitis

Endoscopic biopsies

Esophagus

squamous cell carcinoma.

ABSTRACT

Introduction: Endoscopic biopsies is a very common outpatient procedure in gastroenterology unit. The present article is a study of endoscopic biopsies taken from the esophagus. The gastrointestinal tract cannot be visualized directly and endoscopy is a very important and easy tool for visualization of GI tract lesions directly and helping in the diagnosis in the early stage, there by helping in the overall well being of the patient.

Objectives: To emphasize the utility of endoscopic biopsies in the diagnosis of esophageal lesions. To correlate the endoscopic findings with pathological diagnosis. To study the various pathologies.

Materials and Methods: Endoscopic biopsies taken from the esophagus were studied and analysed in the present study. The biopsies are taken by the gastroenterologist. The biopsies are fixed in 10%formalin.

After fixation the biopsy specimen is processed and embedded in paraffin. 4 to 5 microns thick sections were cut, stained with Haematoxylin & Eosin and studied.

Results: Out of the 118 cases of esophageal biopsies received at the Department of Pathology, Medici Institute of Medical Sciences from December 2016 to November, 2018, .50 were non neoplastic lesions, 68 cases were neoplastic lesions, 50 were non neoplastic lesions, 68 cases were neoplastic lesions. Chronic non specific esophagitis was the commonest non neoplastic esophageal lesion. Squamous cell carcinoma was the commonest neoplastic lesion. The lower one third is the commonest site of pathology for esophagus. Males are mostly effected and predominant age of presentation is around 40-60 years for non neoplastic lesion and 50-70 years for neoplastic region.

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1. Introduction

Esophagus is the first part of intestine and a simple organ. It is a hollow muscular tube connecting the pharynx with the stomach. It has neither any secretory activity nor absorptive function. It has a conductive function of transferring food. Esophagus is affected with a variety of diseases both inflammatory, infectious and neoplastic lesions.

Among the inflammatory lesions gastro esophageal reflux disease is the most common.¹ Others being infections like candidial infection, herpes simplex infection, cytomegalovirus infection and bacterial infections. The non-infectious inflammatory conditions involving the esophagus

include corrosive esophagitis, irradiation esophagitis, eosinophilic esophagitis, graft versus host disease and Crohn's disease.²

The neoplastic lesions include squamous papilloma, squamous cell carcinoma and adenocarcinoma. Apart from carcinomas esophagus is involved by tumors like melanoma, mesenchymal tumors and neuroendocrine tumors.³

In this study we do an observational study wherein sex and age distribution, incidence of various neoplastic and nonneoplastic lesions of esophageal endoscopic biopsies is studied.

2. Aims and Objectives

To emphasize the utility of endoscopic biopsies in the diagnosis of esophageal lesions.

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To study the various pathologies.
To identify the most common lesions.

3. Materials and Methods

The present study consisted of endoscopic biopsies taken from the esophagus received over a period of two years from December 2016 to November 2018 at the Department of pathology, Medciti Institute of Medical Sciences, Medchal.

The present study included patients referred for endoscopic examination with complaints of dyspepsia, bloating, chronic reflux symptoms. A detailed history was taken and physical examination was done.

Endoscopic biopsies taken from the esophagus were studied and analysed in the present study.

The biopsies are taken by the gastroenterologist. The biopsies were gently teased from the endoscopy forceps into a bottle containing 10% formalin to allow rapid fixation.

After fixation the biopsy specimen was wrapped in a filter paper and processed in a perforated capsule. After processing the biopsies were embedded in paraffin. 4 to 5 microns thick sections were cut, stained with Haematoxylin & Eosin and studied.

4. Results

In the present study of esophageal biopsies, we got a total of 118 biopsies, 68 cases were neoplastic and 50 cases were non neoplastic.

Among the 50 cases of esophageal non neoplastic lesions, predominant lesions were chronic non specific esophagitis constituting 18 cases (36%) and esophageal ulceration constituting 16 cases (32%). There were 11 cases (22%) of candidal esophagitis, 2 cases (4%) of Barrett's esophagus, 2 cases (4%) of Reflux esophagitis and 1 case (2%) of Herpes esophagitis.

The chronic nonspecific esophagitis cases include those cases which showed chronic inflammatory cell collections with no other specific features. The esophageal ulcer cases were diagnosed in cases where there is ulceration or evidence of ulceration such as granulation tissue formation.

The 2 cases of Barrett's esophagus were from male patients in their 6th decades. On microscopy intestinal metaplasia with goblet cells was seen adjacent to esophageal lining. Both presented with a salmon patch in the lower 1/3rd on endoscopy.

The 2 cases of Reflux esophagitis are from female patients in their 4th decade of life. On microscopy basal cell hyperplasia, intraepithelial eosinophils and lymphocytes were seen.

Herpetic esophagitis presented as an ulcer in the lower 1/3rd in a female in her 3rd decade. On microscopy multinucleation, nuclear moulding and intranuclear inclusions were seen.

Out of 50 non neoplastic lesions in the esophagus 33 were male and 17 were female. The M:F ratio is 1.9:1.

The youngest patient was 18 year old and oldest patient was 78 year old patient. The mean age of presentation is 48 yrs. Maximum numbers of cases were present in the 5th decade of life (20.0%). In males the peak incidence was noted in the age group of 21- 50 years and in females the peak incidence was noted in the age group of 31-60 years.

The predominant non neoplastic lesion is Chronic non specific esophagitis affecting predominantly the lower 1/3rd. The lower 1/3rd was involved in 73.5% of cases (25 of 34 cases). The middle 1/3rd was involved in 26.5% of cases (9 of 34 cases).

Candidal esophagitis involved predominantly the lower 1/3rd. The lower 1/3rd was more involved in 81.8% (9 of 11 cases). Middle 1/3rd was involved in 2 of 11 cases accounting for 18.2%. Herpetic esophagitis, Barrett's esophagus and Reflux esophagitis all involved the lower 1/3rd only.

On the whole, 78% of the non neoplastic lesions involved the lower 1/3rd and 22% of non neoplastic lesions involved the middle 1/3rd and. The present study did not have any non neoplastic lesions affecting the upper 1/3rd. Thus the lower 1/3rd of esophagus is the site of involvement in majority of non neoplastic lesions.

In the endoscopic appearances of non neoplastic lesions, chronic nonspecific esophagitis predominantly presented as ulcerations, candidiasis presented as white patch, Barrett's esophagus presented as Salmon colored patch and Reflux esophagitis presented as reddish patch. Herpetic Esophagitis presented as ulceration.

Chronic nonspecific esophagitis was the most common lesion which prevailed more in the 6th decade and in males. The two cases of Barrett's esophagus were seen in males both at ages of 60yrs and 65 years. The two cases of reflux esophagitis were seen in females in their 4th decade. One case of Herpetic Esophagitis was seen in 38 year old female.

Among the 118 lesions of esophagus, there were 68 cases of neoplasms. Of these 3 (4.4%) were benign and 65 (95.6%) were malignant.

In the three cases of benign neoplasms 2 cases were squamous papillomas. The 2 cases were from male patients who were in their 5th decade. Both presented as a polypoidal lesion in the middle and lower 1/3rd of esophagus. The squamous papilloma was diagnosed based on the features of hyperplastic squamous epithelium forming papillae with fibrovascular cores.

The 3rd case was from a 65 year old male patient who presented with a polyp in the lower 1/3rd of the esophagus. This was diagnosed as a leiomyomatous polyp. The three benign neoplastic lesions i.e. 2 cases of squamous papilloma and 1 case of leiomyomatous lesion, all presented as polypoidal lesions on endoscopy.

Out of the 3 benign tumors, 1 leiomyomatous polyp and 1 squamous papilloma involved lower 1/3rd (66.6%) and 1(33.3%) case of squamous papilloma was seen in the middle 1/3rd. There are no benign lesions involving the upper 1/3rd.

Thus, in the benign lesions also, the predominant site of involvement is the lower 1/3rd followed by middle 1/3rd.

Of the 65 cases of malignant neoplasms 46 cases (70.8%) are squamous cell carcinomas, 12 cases (18.5%) are adenocarcinomas. There are 5 cases of adenocarcinoma of stomach which spread to the esophagus. One each of adenosquamous and granular cell tumor are noted.

Out of the 65 malignant neoplasms, 34 cases are males and 31 cases are females. Male: Female ratio is 1.1:1.

Maximum numbers of cases were present in the 7th decade of life (27.69%) and more number of cases were seen in the age group of 41 – 70 years of age. In males the peak incidence was noted in the age group of 61- 70 years and in females the peak incidence was noted in the age group of 51-60 years. The youngest patient was a 20 year old female and the oldest patient was a 85 year old male. The mean age of presentation was 52.5%.

As most of the cases were squamous cell carcinomas, the age and sex incidence of squamous cell carcinoma are almost similar to overall age and sex incidence.

Among the 3 adenocarcinoma cases one was 48 year old female. The second case was from a 62 year old male. The third one was from a 55 year old male who also presented with Barrett's metaplasia adjacently.

The predominant type of presentation of esophageal carcinoma was proliferative growth seen in 42 cases (64.6 %) of the 65 malignant neoplastic lesions, followed by ulcerative type seen in 12 cases (18.5%) and polypoidal growth pattern seen in 7 cases (10.7%). Stricture formation was the least common type accounting for 4 cases (6.2%). Proliferative growth pattern is seen as an exophytic irregular mass. The ulcerated area was seen as well defined area of loss of mucosa with raised margins. The polypoidal lesion is seen as a regular mass protruding into the lumen with a stalk.

Of the 65 malignant neoplasms, 46 cases (70.7%) are squamous cell carcinomas, 12 cases (18.4%) are adenocarcinomas, 5 cases (7.6%) of adenocarcinoma of stomach which have extended to the lower end of esophagus, 1 case (1.5%) of adenosquamous carcinoma and 1 case (1.5%) was a granular cell tumor.

22 cases (47.8%) of the 46 cases of squamous cell carcinoma arise in the middle 1/3rd which is the predominant site of involvement. 14 cases (30.4%) are seen arising from the lower 1/3rd and 10 cases (21.7%) are seen arising from the upper 1/3rd.

The well differentiated cases and the moderately differentiated squamous cell carcinoma cases predominantly involved the middle esophagus but the

poorly differentiated cases involved the lower esophagus.

10 cases (83.3%) of the 12 cases of adenocarcinoma arise in the lower 1/3rd and 2(16.6%) cases are seen arising from the middle 1/3rd. All the adenocarcinomas that spread from the stomach are seen occupying the lower one third.

1 case of Adenosquamous cell carcinoma affected the lower one third. 1 case of Granular cell carcinoma occupied the middle 1/3rd.

On an overview lower 1/3rd was affected with more number of carcinoma than the middle and upper 1/3rd with 30 cases (46.2%) affecting this area except for squamous cell carcinoma which involved the middle 1/3rd.

Of the 46 cases of squamous cell carcinoma 28 cases (60.8%) were well differentiated, 12 cases (26.1%) were moderately differentiated and 6 cases (13.1%) were poorly differentiated.

5. Discussion

In the esophagus the non neoplastic lesions account for 42.4% and neoplastic lesions account for 57.6%. This was not in accordance with Sandhya P et al⁴ and Shaheen A et al.⁵ Both studies showed predominance of Non neoplastic lesions almost nearing to 90% (when considered as a part of esophageal lesions).

In the non neoplastic lesions, chronic nonspecific esophagitis is the most common lesion which accounts for 36% of the esophageal conditions followed by esophageal ulceration (33%), Candidal esophagitis (21%), GERD (4%), Barrett's esophagitis (4%) and Herpetic Esophagitis (2%).

This was in accordance with Shaheen A et al which showed 85.4% of Chronic non specific esophagitis followed by Candidal esophagitis which accounted for 1.7%.

Quereshi et al⁶ study also showed the predominant lesion to be chronic non specific esophagitis but the share it occupied was less when compared to the present study, the percentage being 53.1%. This was followed by Barrett's Esophagitis whose prevalence was 36.8%.

This was not in accordance with the study done by Sandhya et al which showed equal incidence of both chronic non specific esophagitis and GERD. Sandhya et al study had 25% each of chronic non specific esophagitis and GERD. Thus, the present study is in agreement with other studies in terms of the predominant lesion.

The spectrum of other non neoplastic lesions seen in this present study were same as that seen in studies of Sandhya et al, Quereshi et al and Shaheen et al but they differed in their incidence.

Among the non neoplastic lesions chronic non specific esophagitis is the most common, which predominantly presented as ulcerations, Candidiasis presented as whitish patch and GERD presented as reddish patch.

Among the non neoplastic lesions 78% of cases affect the lower 1/3rd followed by middle 1/3rd which is involved by 22% of cases. In the present study none of the lesions were

involving the upper 1/3rd.

In the neoplastic lesions squamous cell carcinoma was the commonest carcinoma accounting for 68% followed by adenocarcinoma (18%), adenocarcinoma of stomach metastasis to stomach (7%), squamous Papilloma (3%), 1% each Adenosquamous, granular cell tumor and leiomyomatous polyp.

This correlated well with Wang et al⁷ and Leena devi⁸ et al which showed 66% and 61.29% of squamous cell carcinoma followed by 34% and 21.5% of adenocarcinoma respectively. This also correlated well with Mark Tetty et al⁹ which showed 78.7% and 21.3% of squamous cell carcinoma and adenocarcinoma respectively

This was in accordance with the study done by Uzma Bukhari¹⁰ et al which showed 95% of squamous cell carcinoma and 3% of adenocarcinoma but the percentage in the present study was much lower. Cherian V et al¹¹ also showed which showed 92% of squamous cell carcinoma.

This was not in accordance with Quereshi et al and Byrne et al who had Adenocarcinoma as the predominant pattern accounting for 70.2% and 50% of esophageal cancers

In the present study the age at which esophageal lesions occurred was between 4th and 7th decades. The neoplastic lesions were more in the 5th to 7th decade. This was in accordance with studies made by Sandhya et al, and Suleiman et al. Uzma Bukhari et al, Helena et al¹² and Mark Tetty et al showed 5th to 7th decade to be more affected in neoplastic lesions.

Malignant tumors of upper GI have a long natural history and present at a later age in a fairly advanced stage.

The present study showed that males are predominantly involved sex which was in accordance with the other studies mentioned above. The male: female ratio for esophageal non neoplastic lesions is 1.9: 1 and in neoplastic lesions it is 1.1: 1.

This was in accordance with the study done by Sandhya et al which showed M:F ratio of 1.74:1. The sex incidence of neoplastic lesions was in accordance with Uzma Bukhari et al, Helena et al and Mark Tetty et al which showed 1.3 :1, 3:1 and 4:1 but the percentages vary.

Studies on esophageal malignancies claimed that most cases are attributed to exposure to tobacco, alcohol and chewing betel leaf. Since, these habits are more common in males the malignancies occur more commonly in males. Recent changes in the distribution pattern in some countries indicate that the rate of SCC has increased steadily in low-risk areas, particularly among females. This shows the near equal incidence of esophageal cancers in males and females.

Among the neoplastic lesions, both squamous papilloma and leiomyomatous polyp present as polypoidal masses.

In the malignant neoplastic lesions, the predominant endoscopic appearances were proliferative growth pattern (64.6%), ulcerative (18.5%), polypoidal (10.7%) and stricture formation (6.2%).

This was in accordance with Mohan Kumar et al² and Das Gupta et al³ which showed proliferative growth pattern in 56.57% and 61.5% cases followed by 27.3% and 11.5% cases showing ulcerative pattern.

Superficial oesophageal cancer is commonly observed as a slight elevation or shallow depression on the mucosal surface, which is a minor morphological change compared to that of advanced cancer. Macroscopically, three types can be distinguished flat, polypoid and ulcerated.

Among the benign neoplastic lesions 66.6% cases involve the lower 1/3rd and 33.3% involve the middle 1/3rd.

Among the malignant neoplastic conditions, squamous cell carcinoma predominantly involved the middle 1/3rd(47.8%) followed by lower 1/3rd. Among the adenocarcinoma 83.3% of cases involved the lower 1/3rd. This was in accordance with Pedram et al¹³ and Byrne et al study as shown in the below table.

On the whole 15.4% of malignancies affect the upper 1/3rd, 38.5% involve the middle 1/3rd and 46.2% involve the lower 1/3rd. This is in accordance with the study made by, Cherian et al, Pedram et al.

Anwar Ali et al,¹⁴ Byrne J P et al, and Sandhya et al also showed involvement of lower esophagus in malignant conditions but were showing higher percentages when compared to the present study.

6. Conclusion

Endoscopy proves to be a prompt approach as we can get accurate results from the tissue that was sampled under direct visualization. Endoscopy bits, even though very small can provide good information about the disease process. Adequate sampling is one of the most important prerequisite.

Some interesting cases which were encountered in the present study were Herpetic esophagitis, Granular cell tumor of esophagus, leiomyomatous polyp in esophagus, squamous cell carcinoma along with Candida in Esophagus,

The predominant age group which was affected was 4th to 6th decade. Neoplastic lesions affecting the older individuals when compared to the non neoplastic lesions.

The involvement of different lesions in various sites was more common in males. The M: F ratio in esophageal neoplastic and non neoplastic lesions was 1.1: 1 and 1.9:1 respectively.

Most of the endoscopic observations correlated with the histological diagnosis. Neoplastic lesions presented as ulceroproliferative growths and the non neoplastic lesions presented as ulcerations of the mucosa. Other endoscopic appearances included friable and flattened mucosa which did not show any constant specificity, as they were seen in both neoplastic as well as non neoplastic lesions.

In the esophagus lower one third was the predominant site of involvement. 78% of non neoplastic lesions and 46.2% of neoplastic lesions involved the lower 1/3rd. Thus,

there are large number of cases that can be diagnosed just by biopsying the mucosa and sub mucosa.

To conclude adult males are affected with esophageal lesions. Neoplastic lesions appear to affect the esophagus predominantly. Malignant were the predominant lesions with epithelial tumors being more common. Squamous cell carcinoma was common in esophagus. Lower third of the esophagus were most commonly involved.

7. Source of Funding

No financial support was received for the work within this manuscript.

8. Conflicts of Interest

There are no conflicts of interest.

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Cite this article: Kedarisetty V. Spectrum of esophageal lesions- A study of endoscopic biopsies. *IP J Diagn Pathol Oncol* 2021;6(2):127-131.