



Heterotopic gastric mucosa (inlet patch): Endoscopic prevalence and association with supraesophageal and upper esophageal symptoms

Remzi Beştaş¹, Nazım Ekin²

1 Memorial Dicle Hospital, Gastroenterology Department, Diyarbakır, Turkey

2 Health Sciences University Diyarbakır Gazi Yaşargil Training and Research Hospital, Gastroenterology Department. Diyarbakır, Turkey

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Abstract

Objective: To determine the frequency, demographic and clinical features of the heterotopic gastric mucosa (inlet patch).

Methods: This retrospective study involves 244 patients who applied to the gastroenterology outpatient clinic with different symptoms between September 2016 and December 2019, and who were diagnosed with inlet patch in elective esophagogastroduodenoscopy. All endoscopic procedures were performed by the same clinical endoscopist. All medical records of patients including demographic and clinical features and endoscopy findings were reviewed.

Results: Considering 2823 patients who underwent elective esophagogastroduodenoscopy in the same study period, inlet patch was detected in 224 (8.6%). The number of male patients was 138 (56.6%) and there was no statistical difference between the two genders. The mean age of the patients was 37.73 ± 13.01 years. Single lesion was detected in 204 (83.6%) patients. The size of the largest lesion was 4.5 cm and the smallest lesion was 0.3 cm. All of the lesions were in the proximal esophagus. 54 patients (22.1%) had at least one supraesophageal or upper esophageal symptom. The most common symptom was globus sensation (64.8%). Patients with large lesions were more likely to experience symptoms (28.2% vs. 13.7%, $p=0.008$).

Conclusion: Careful examination of the proximal esophagus may increase the chance of detecting inlet patch and may explain persistent symptoms in patients without a specific cause. Further understanding of the clinical significance of the disease may also prevent unnecessary diagnostic interventions.

Keywords: Inlet patch, Heterotopic gastric mucosa, Prevalence, Globus sensation, Endoscopy

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Correspondence / Yazışma Adresi: Remzi Beştaş, Memorial Dicle Hospital, Department of Gastroenterology. Diyarbakır, Turkey e-mail: bestasr@gmail.com

Heterotopik mide mukozası (inlet patch): Endoskopik prevalansı ile supraözofageal ve üst özofageal semptomlar ile ilişkisi

Öz

Amaç: Heterotopik mide mukozasının (Inlet patch) sıklığını, demografik ve klinik özelliklerini belirlemek amaçlandı.

Yöntemler: Gastroenteroloji polikliniğine Eylül 2016 ve Aralık 2019 tarihleri arasında değişik semptomlar ile başvuran, endoskopi endikasyonu konulan ve elektif olarak tek endoskopist tarafından özofagogastroduodenoskopi yapılan 2823 hasta çalışmaya dahil edildi. İnlet patch tespit edilen 244 hastanın verileri analiz edildi. Hastaların demografik ve klinik özellikleri ile lezyonun özellikleri kaydedildi.

Bulgular: Bu çalışmada elektif özofagogastroduodenoskopi yapılan 2823 hasta göz önüne alındığında, inlet patch hastaların 224'ünde (%8,6) tespit edildi. İnlet patch tespit edilen hastaların %56,6'sı erkek olup iki cinsiyet arasında istatistiksel fark yoktu. Hastaların yaş ortalaması 37.73 ± 13.01 yıl idi. Hastaların %83,6'sında sadece bir lezyon vardı. En büyük lezyonun boyutu 4.5 cm, en küçük lezyon ise 0.3 cm idi. Lezyonların hepsi proksimal özofagusta yerleşikti. Hastaların 54 (%22,1)'ünde supraözofajial ve üst özofajial semptomlardan en az biri mevcuttu. Bu semptomlardan en sık görüleni de globus hissi (%64,8) idi. Lezyonu büyük olan hastalarda semptom görülme ihtimali daha yüksek idi (%28,2'ye %13,7, $p=0.008$).

Sonuç: Proksimal özofagusun dikkatli incelenmesi inlet patchin tespit etme şansını artırabilir ve bazı hastalarda belirli bir nedeni olmayan inatçı semptomları açıklayabilir. Hastalığının klinik öneminin daha fazla anlaşılması, gereksiz tanısal girişimleri de engelleyebilir.

Anahtar kelimeler: İnlet patch, Heterotopik mide mukozası, Prevalans, Globus hissi, Endoskopi.

INTRODUCTION

Heterotopic gastric mucosa (HGM), which is also called inlet patch (IP) is characterized by congenital existence of salmon-color gastric columnar epithelial islands in the cervical esophagus. These patch-shaped islets, observed just below the upper esophageal sphincter, vary in diameter from a few millimeters to 4.5-5 cm¹⁻³. An inlet patch may be slightly convex, flat, or concave, and these ectopic mucous islands, separated from normal mucous by sharp borders, can be seen as a single piece or multiple pieces. The incidence of endoscopically diagnosed inlet patch has a large variation⁴⁻⁶. Wide variation in this incidence may be related to the anatomical localization of inlet patches and insufficient examination of the proximal esophagus by endoscopists. The increasing awareness of endoscopists about the presence of HGM and identification of its association with some symptoms increased the rate of endoscopic diagnosis of this lesion⁷. This lesion, the clinical significance of which is not exactly

known yet, may cause sticking sensation, foreign body sensation and/or burning complaints in the proximal part of the esophagus. This study evaluates the incidence of inlet patch, and its association with age, gender and symptoms in the esophagogastroduodenoscopy (EGD) procedures performed by a single endoscopist under sedation, during which the proximal esophagus was carefully examined.

METHODS

This retrospective study involves 244 patients diagnosed with inlet patch from 2823 patients who applied to the gastroenterology outpatient clinic with different symptoms between September 2016 and December 2019, signed a written consent form, and underwent elective endoscopy. Patients whose endoscopic data were not clear were excluded from the study. Following full sedation under the supervision of an anesthesiologist after at least 8 hours of fasting, the patients underwent upper endoscopy performed by a single endoscopist.

Proximal esophagus was examined in detail during all endoscopy procedures. Inlet patch (HGM) was defined as patch-shaped lesions covered with salmon-red mucosa, the boundaries of which can be distinguished from the pearl gray esophageal mucosa (Figure 1a-b). Demographic data of 244 patients diagnosed with inlet patch were recorded. The size of each inlet patch was determined by the top opening of the fully open biopsy forceps. The size, number and localization of the lesions were recorded. Inlet patch lesions were divided numerically into two groups, as single and multiple. Then, the lesions were distributed according to age and gender. Globus sensation, hoarseness, voice thickening, sore throat, cough, dysphagia, and odynophagia were considered as supraesophageal and upper esophageal symptoms. The presence of these symptoms and their association with the number and size of inlet patches were evaluated. This study was approved by the Clinical Research Ethics Committee at Health Sciences University Diyarbakır Gazi Yaşargil Training and Research Hospital (15.01.2021/621).

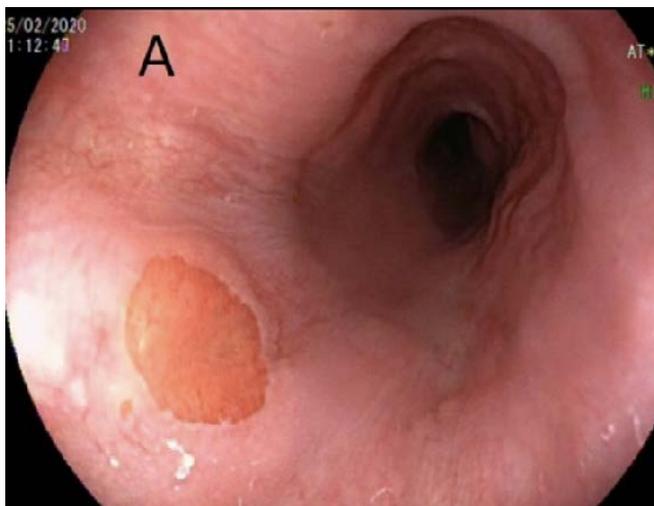


Figure 1a: Endoscopic images of heterotopic gastric mucosa of the proximal esophagus. Flat, round inlet patches in white light endoscopy vs

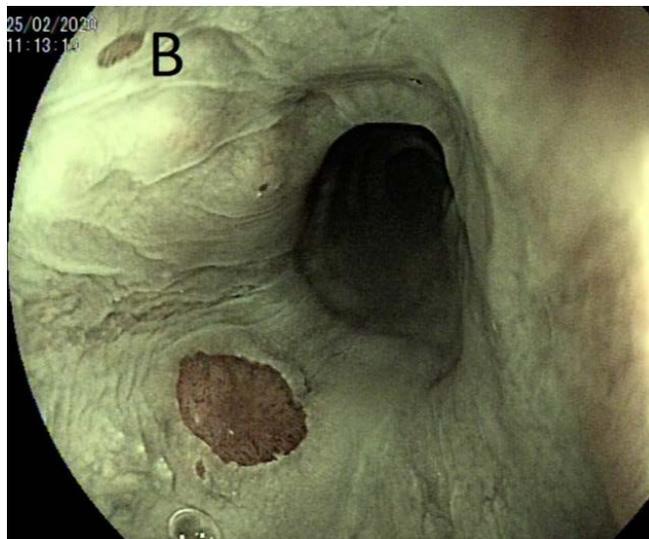


Figure 1b: optical chromoendoscopy (narrow band imaging), in a middle age man.

Statistical Analysis

All statistical analyzes were performed by using statistical Package (SPSS) 21.0 software. For the significance of the difference between the two groups, the categorical variables were compared by using the Pearson's chi-squared test or Fisher's exact test, and continuous variables were compared by using Student's t test. Two-way values $p < 0.05$ were considered statistically significant.

RESULTS

In our study, IP was endoscopically detected in 244 (8.64%) of 2843 patients who underwent EGD. The mean age of patients diagnosed with IP was 37.73 ± 13.01 . 106 (43.4%) of the patients were female and 138 (56.6%) were male. All of the IP lesions observed in the patients were located in the proximal esophagus. Single lesion was detected in 204 (83.6%) patients and multiple lesions in 40 (16.4%). The smallest lesion was 0.3 cm, while the largest lesion was 4.5 cm. While no supraesophageal or upper esophageal symptom was found in 190 (77.9%) of the patients, 54 (22.1%) of the patients had at least one of the supraesophageal and upper esophageal symptoms. Globus sensation (64.8%) was the

most common symptom followed by dysphagia (12.9%), and cough (11.1%). Age did not have a significant relation with the symptoms or the number and size of the lesion ($p > 0.05$). However, the patients with large lesions were more likely to experience symptoms (28.2% vs. 13.7%, $p=0.008$). Demographic data of the patients and distribution of symptoms are given in the table 1 and table 2.

Table I: Demographic characteristics of patients.

| Variables | |
|-------------------------------------|-----------------------|
| Age, year, mean±SD (min-max) | 37.73 ± 13.01 (16-77) |
| Female, n (%) | 106 (43.4%) |
| Male, n (%) | 138 (56.6%) |
| Number of pathces, n (%) | |
| <1 | 204 (83.6%) |
| >1 | 40 (16.4%) |

SD; standart deviation, n;number

Table II: Clinical features of patients.

| | |
|---|------------|
| Supra esophageal/ upper esophageal symptoms, n (%) | 54 (22.1%) |
| Globus sensation | 35(64.8%) |
| Hoarseness | 3 (5.5%) |
| Dysphagia | 7 (12.9%) |
| Sore throat | 0 |
| Chronic cough | 5 (11.1%) |
| Odynophagia | 3 (5.5%) |

n;number

DISCUSSION

Ectopic gastric mucosa may appear anywhere along the gastrointestinal tract. It was first defined by Schmidt in 1805 and it is usually located in the postcricoid area of the esophagus or just below the upper esophageal sphincter and it is considered to be a congenital anomaly. The lesion is more common when the endoscope shaft is pulled by the endoscopist very slowly from the proximal esophagus^{6,8}. The incidence of these lesions, which are frequently ignored by endoscopists, has been reported in a wide range of 1% to 13.8%^{3,5-7}. In this study, the

incidence of inlet patch was found to be 8.64%. The mean age of the patients was 37.73 ± 13.01, and it was more common in male patients with 56.6%. The incidence rate of inlet patch in our study was higher than many reported studies. Due to the fact that all cases were performed by a single endoscopist, and the proximal esophagus was examined in detail, a higher rate was found in our study compared to many other reported studies. While inlet patch is seen at any age, it is typically seen in fifties⁹. Our study found that it is also seen at younger ages. With detailed examination of the proximal esophagus, inlet patch diagnostic efficiency can be increased. In addition, the use of NBI can increase the frequency and accuracy of diagnosis¹⁰⁻¹². In our own experience, we have seen that the most important event that increases the frequency of inlet patch diagnosis is a detailed examination of the esophagus proximal.

The clinical significance of inlet patch (IP) is not known much. Inlet patch, which is mostly asymptomatic, causes supraesophageal and upper esophageal symptoms, but it is usually detected in endoscopic examinations carried out due to other gastrointestinal complaints. However, inlet patch may also appear with more serious medical problems such as pain, dysphagia, ulcer, bleeding, perforation or esophageal web^{13,14}. While there are publications supporting the increase in the severity of symptoms with the size of the lesion^{15,16} the relationship between acid secretion and inlet patch-related symptoms remains uncertain. Studies suggest that only a small proportion of symptomatic patients had acid secretion from inlet patch^{17,18}. Patients who are symptomatic typically have laryngopharyngeal symptoms such as globus pharyngeus, sore throat, hoarseness, chronic cough, throat clearing, and dysphagia, and these symptoms are thought to occur due to irritation of the airways and vocal cords due to acid

secretion^{19,20}. Macha et al.²¹ showed that children with IP had a higher rate of respiratory symptoms compared to the control group. Poyrazoglu et al.¹⁵ also reported a higher incidence of dysphagia in adults with IP. Another study shows that the frequency of upper esophageal or laryngopharyngeal symptoms did not differ between the case group and control group⁵ 54 (22.1%) of our patients with inlet patch had at least one of the supraesophageal and upper esophageal symptoms. None of our patients had severe complications. Conducted studies reported the frequency of upper esophagus and supraesophageal symptoms in inlet patch patients at rates ranging from below 20% to 70%²². The reason for the fact that this ratio is slightly lower in our study may be due to the fact that our study was retrospective and these symptoms were not adequately questioned. No relation was found among the frequency of symptoms, the number of lesions and the age of patients. In line with the above-mentioned publications, the frequency of symptoms was significantly higher in patients with lesions greater than 1 cm (p: 0.008).

While IP is typically seen as a single lesion, it can also be seen as multiple lesions²⁰. In our study, a single lesion was found in 204 (83.6%) of the IP cases, while 40 (16.4%) of the cases showed 2 or more lesions in accordance with the literature, The size of the lesions in the inlet patch can vary from a few millimeters to 4.5-5 cm^{1,5}. In our study, while the size of lesion was less than 1 cm in 102 (41.8%) cases, it was larger than 1 cm in 142 (58.2%) patients, with the largest one being 4.5 cm.

Strictures and webs are treated with serial dilatation but should include biopsy to rule out malignancy^{5,23} Overall, significant histological non-malignant changes or malignancies in HGMPE are extremely rare. Neoplastic transformations have only been reported in the adult population^{22,24}. Since the first case

reported by Carrie et al²⁵ in 1950 there have only been 43 cases of adenocarcinoma²⁶⁻²⁸ in association with HGMPE reported in the literature to date. Based on two studies, it can be estimated that the incidence of malignancies among patients with HGMPE ranges between 0 and 1.56%²⁹.

There is no standardized treatment strategy for inlet patch. Treatment is not required for asymptomatic patients. For symptomatic patients, H2-receptor antagonists or proton pump inhibitors can be used. Dilatation may be performed for strictures and webs. Furthermore, laser or radiofrequency ablation of inlet patches has been shown to relieve globus and has been used to successfully treat inlet patch dysplasia although its routine use in this context has not been determined^{8,20,30}.

In conclusion, the incidence of this disease, which is usually diagnosed incidentally, varies greatly. Careful examination of the proximal esophagus contributes to a significant increase in the diagnosis rate of inlet patch. With the diagnosis of inlet patch, the etiology of symptoms such as sore throat, globus sensation and dysphagia, which have become uncomfortable and chronic in some patients, can be detected and this may help to prevent many examinations in such patients. Acid secretion blockers can relieve symptoms. Inlet patch will become more clear with the increase in the diagnosis rate of this typically-overlooked disease and the publications on the subject.

Ethics Committee Approval: This study was approved by the Clinical Research Ethics Committee at Health Sciences University Diyarbakır Gazi Yaşargil Training and Research Hospital (15.01.2021/621).

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Conflicts of interest: There are no conflicts of interest.

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