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The Only and First Analysis of Upper Gastrointestinal Endoscopy Results from Mogadishu-Somalia

Somali-Mogadişu'da Yapılan Üst Gastrointestinal Sistem Endoskopisi Sonuçlarının İlk ve Tek Analizi

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ABSTRACT Objective: There is'nt any study giving information about profiles of upper gastrointestinal (GI) diseases in Somalia; this study has reported the analysis of upper endoscopic results from Mogadishu for the first time. In this study we aimed to evaluate the distributions of the upper gastrointestinal diseases in Mogadishu. **Material and Methods:** Three hundred six patients who underwent upper GI endoscopy between 01.01.2015 and 20.04.2017 at Mogadishu Recep Tayyip Erdoğan Somalia-Turkey Training and Research Hospital were included in this study. Patients grouped according to the age, gender and diagnoses and assessed. **Results:** Ninety-seven patients were female (31.7%), 209 patients were male (68.3%). Age range was 16-97 years (mean age 47.9 years). The rates of upper GI were 18.0% (55 cases) esophageal cancer (nearly all patients had adenocarcinoma, squamous type was very rare), 2.3% (7 cases) gastric adenocarcinoma, 44.1% (135) endoscopic gastritis, 10.1% (31cases) peptic esophagitis, 4.3% (13 cases) duodenal ulcer, 4.3% (13 cases) bulbitis, 3.0% (9 cases) hiatal hernia, and 1.3% (4 cases) candidial esophagitis. 24 patients (7.8%) had normal endoscopic appearance. **Conclusion:** In our study we showed that the prevalence of esophagial cancer was higher in Mogadishu than in those of western countries. We think that the high rate of esophagus cancers due to the use of "khat" named an anxiolytic plant, too hot rice eating, poor nutrition from fresh vegetables and fruits, and the meals cooked in coal fire. Reduction the khat chewing and the improvements in eating habits are mandatory in order to reduce esophageal cancer cases.

Keywords: Endoscopy; upper gastrointestinal diseases; mogadishu; eating habits; khat chewing; esophageal cancers

ÖZET Amaç: Somali'de üst gastrointestinal sistem (GİS) hastalıklarının profili ile ilgili bilgi veren bir çalışma bulunmamaktadır. Bu çalışma Mogadişu'da üst GİS endoskopisi sonuçlarının analizi ile ilgilili ilk çalışmadır. Bu çalışmada Mogadişuda üst GİS hastalıklarının dağılımı ile ilgili ilk değerlendirmeyi yapmayı amaçladık. **Gereç ve Yöntemler:** Çalışmaya 01.01.2015 ve 20.04.2017 tarihleri arasında Recep Tayyip Erdoğan Somali-Türk Eğitim Araştırma Hastanesinde Üst GIS endoskopisi yapılmış olan 306 hasta dahil edildi. Hastalar yaş, cinsiyet ve tanılarına göre gruplandırılarak değerlendirildi. **Bulgular:** Çalışmada 97 hasta kadın (%31,7), 209 hasta erkekti (%68,3). Yaş aralığı 16-97 (ortalama 47,9) yıl idi. 55 hastada (%18,0) özofagus kanseri (hastaların tama yakını adenokarsinom tipte olup, skuamöz hücreli karsinom tip nadirdi), 7 hastada (%2,3) mide kanseri, 135 hastada (%44,1) gastrit, 31'inde (%10,1) peptik özofajit, 13 hastada (%4,3) bulbusta ülser, 13'ünde (%4,3) bulbit, 9 hastada (%3,0) herni ve 4 hastada (%1,3) kandidial özofajit, 24 (%7,8) hastada ise normal endoskopik bulgular saptandı. **Sonuç:** Çalışmamızda Batı ülkelerine nazaran Mogadişu'da özofagus kanseri prevelansı daha yüksek olarak bulundu. Daha yüksek özofagus kanseri oranı görülmesinin nedeni olarak "khat" isimli anksiyolitik bitki çiğnenmesi ve sıcak pirinç yeme alışkanlığı, taze sebze-meyveden fakir beslenme ve kömür ateşinde yemek pişirme alışkanlığını düşünmekteyiz. "Khat" çiğnemenin azaltılması, yeme alışkanlıklarının iyileştirilmesi özofageal kanserin azaltılmasında gereklidir.

Anahtar Kelimeler: Endoskopi; üst gastrointestinal hastalıklar; mogadişu; yeme alışkanlıkları; özofageal kanserler

Cancer registry data across Africa are incomplete, but such data as exist indicate that esophageal carcinoma incidence is high. Record linkage methods, use effectively in industrialized countries, are feasible in Africa but the lack of computerized medical records precludes optimal analysis of existing data.[1] The advent of flexible endoscopy increased the sensitivity and specificity in the diagnosis of gastro-duodenal diseases.

Now it has been clearly emerged that the gastro-duodenal diseases prevalence is high throughout Africa including historically lower prevalence areas.[2]

Esophageal cancer (EC) is the sixth leading cause of cancer death worldwide.[3] Huge geographical variations exist in epidemiological characteristics of EC. The highest incidence rates were observed in Eastern Asia and in Eastern and Southern Africa however, the lowest rates were seen in Western Africa. The variability is estimated more than 21 times between the lowest-incidence and the highest-incidence countries.[4] In sub-Saharan Africa incidences of esophageal squamous cell carcinoma has regional differences; there is significantly higher incidence rates in southern and eastern regions.[5]

The aim of this study was to assess upper gastrointestinal endoscopy (UGE) results retrospectively between 01.01.2015 and 20.04.2017 in Mogadishu Recep Tayyip Erdogan Somalia-Turkey Training and Research Hospital (MSTERH). Our study is important because of the first study on UGE findings in Somalia.

MATERIAL AND METHODS

The study was organized based on the 1989 Helsinki protocol. Ethics committee approval taken from MSTERH ethics committee. Before endoscopic intervention information forms about endoscopy operation and its risks in 3 languages (Turkish, English, Somalian). Diagnostic categories were analyzed as percentage of records available, with gender, age, diagnosis.

Consecutive 306 patients were included in the study who underwent upper GI endoscopy between 01.01.2015 and 20.04.2017 dates, and multiple biopsy samples obtained from lesions. Fujinon System 4400 endoscopy machine was used in endoscopic procedures. Endoscopic diagnoses were made to be esophagitis, gastritis and duodenitis by mucosal edema, erosion, and hyperemia. The mucosal defects bigger than 5 mm were accepted as peptic ulcer.

Histopathological diagnoses were made with these tissues specimens taken during UGE. Hematoxylin-eosin dye was used in the histopathological evaluation (Figure 1).

RESULTS

This study included 306 patients. Ninety-seven cases were female (31.7%), 209 cases were male (68.3%). Age range was 16-97 years, (mean age 47,9 year). There were 55 (18.0%) EC, 7 (2.3%) gastric cancer (GC), 135 (44.1%) gastritis, 31 (10.1%) esophagitis, 13 (4.3%) duodenal ulcer, 13 (4.3%) bulbitis, 9 (3.0%) hernia, 4 (1.3%) Candida esophagitis, and 24 (7.8%) normal endoscopic findings in our study (Table 1).

Forty-three of the EC were localized in the lower 1/3 distal, 9 in the middle and 3 in the upper 1/3. There were esophagus cancers in every age group. However, it was found to be more frequent between 40-80 years (Figure 2).

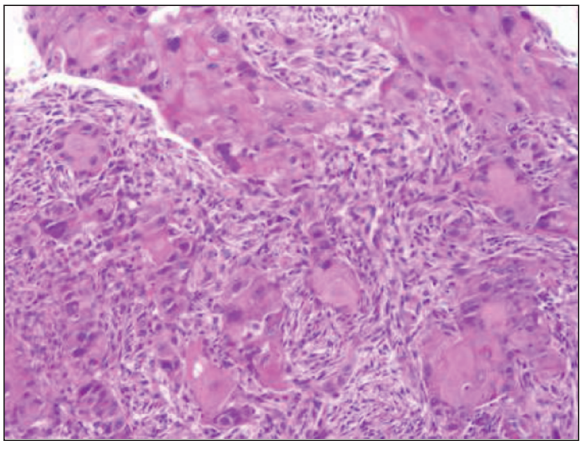

FIGURE 1: Squamous cell carcinoma of the esophagus (H&E, X20).

TABLE 1: Endoscopically and pathologically distributions of cases in both genders.

Diagnosis	n (%)	Male n (%)	Female n (%)
Esophageal cancer	55 (18.0)	34 (16.3)	21 (21.7)
Gastric cancer	7 (2.3)	4 (1.9)	3 (3.1)
Gastritis	135 (44.1)	91 (43.5)	44 (45.4)
Normal	24 (7.8)	17 (8.1)	7 (7.2)
Esophagitis	31 (10.1)	21 (10.0)	10 (10.3)
Candidial esophagitis	4 (1.3)	3 (1.4)	1 (1.0)
Bulbus ulcer	13 (4.3)	12 (5.7)	1 (1.0)
Bulbitis	13 (4.3)	10 (4.8)	3 (3.1)
Hernia	9 (3.0)	8 (3.8)	1 (1.0)
Stomach polyp	3 (1.0)	1 (0.5)	2 (2.1)
Gastric ulcer	2 (0.7)	2 (1.0)	
Atrophic gastritis	2 (0.7)	2 (1.0)	
LES looseness	5 (1.6)	2 (1.0)	3 (3.1)
Lower esophageal varices	1 (0.3)	1 (0.5)	
Achalasia	1 (0.3)		1 (1.0)
Barret esophagus	1 (0.3)	1 (0.5)	
TOTAL	306	209 (68.3)	97 (31.7)

LES: Lower esophageal sphincter.

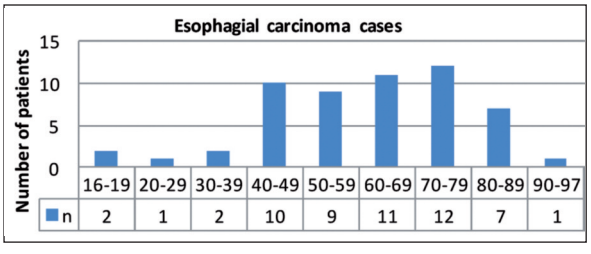

FIGURE 2: Numerical and age distribution of esophageal cancer cases.

DISCUSSION

The upper gastrointestinal endoscopy is the best diagnostic tool for diagnosing esophageal, gastric and duodenal diseases, and also other small intestinal diseases (example gluten sensitive enteropathy).[6] Because clinical symptoms and laboratory findings are not typical in early stage esophagogastric malign neoplasms, earlier UGE is very important in the patients having alarm symptoms.[7]

Esophageal cancer is the eighth most common cancer around the world. An estimated about 455.000 new EC cases and 420 000 deaths occurred globally in 2012 worldwide. Esophageal cancer incidence rates vary internationally by more than 21-fold. The highest rates are found in Asian cancer belt which extends from eastern Turkey, through Iraq, Iran, central Asian countries and Western/northern China, and in Eastern and Southern Africa and the lowest rates are found in Western Africa. Esophageal cancer is usually 3 to 4 times more common among men than women. The incidence of Eastern Africa is 11.9 for males and 7.8 for females per 100,000.[8]

In our study, there were EC in 55 (18.0%) cases, and of them, 34 (16.3%) were male and 21 (21.7%) were female. There were gastric cancer in 7 cases, and of them, 4 (1.9%) were male and 3 were female (3.1%). Esophageal cancer was the most commonly diagnosed cancer in 2013 for men in Malawi and Turkmenistan and the most common cause of cancer death in Comoros, Djibouti, Kenya, Malawi, Somalia, South Sudan, Turkmenistan, and Zimbabwe.[9] EC is the second leading cause of cancer-related deaths in Republic South Africa, but its etiology has not been understood to date.[10,11]

The incidence of these upper gastrointestinal malignancies varies widely based on geographic location, race, and socioeconomic status.[12] The primary causes of esophageal squamous cell carcinoma are tobacco use and alcohol consumption whereas the main risk factors for adenocarcinoma of the esophagus are gastroesophageal reflux disease and obesity.[12,13] McCormack et al. found that for nearly all esophageal SCC risk factors known to date, including tobacco, alcohol, nitrosamines and both inhaled and ingested-polycyclic aromatic hydrocarbons. In the highness of EC rate in UGE population of Mogadishu, main causative factors may be "khat chewing", which is easily accessible in the Somali region, eating too hot rice mush, and cooking meals in coal-fired in our study.[11]

Squamous cell carcinoma is still the most common histologic type in the world. The areas with the highest incidence are found in Africa and the Middle East. It is the most frequent histological type in black individuals and white women, while adenocarcinoma is predominant in white men ($P<0.001$).[14] In our study, nearly all EC cases were adenocarcinoma histopathologically. In cigarette

smoking and alcohol consumption is most important factors in occurence of EC in developed countries. On the other side in undeveloped countries hot foods, hot drinks, poor diet from fresh vegetables and fruits, the deficiencies vitamin C, vitamin E and essential nutrients is the most effective contributors for development of EC.[15]

Khat is a shrub, whose leaves have been chewed by people who live in the Eastern part of Africa and the Arabian Peninsula. Among khat users in Yemen EC compared with GC has a higher incidence.[15] Also, in Somalia meals are often cooked with coal fire, and this method can provide a significant increase in nitrogenous components in foods. Also hot tea and hot rice consumption, chewing khat named plant may be - much important-etiologic factors for EC. Alcohol consumption is absent in Somalia because of religious beliefs.

In many parts of the world and throughout Europe, the incidence and mortality rate of GC is decreasing due to-decrease in *Helicobacter pylori* infection and early diagnosis.[5] In USA GC is fourth cancer in incidence both males and females.[16] In our study the number of GC was low (n=7, 2.3%). This low numerical ratio can be due to some factors. There is no health care system and no regular endoscopic surveillance programs in Somalia.

Because of the high cost of health services people renders to go traditional treatments. Also environmental, diet, and genetic factors may be effective in low GC.

Esophagitis incidence is 15% in adults in USA.[7] In our study esophagitis incidence was 31 (10.1%) Candida esophagitis was seen only 4 (1.3%) patients.

CONCLUSION

In conclusion EC frequency is higher than western countries in Mogadıshu-Somalia. Esophageal cancers appear to have risen in all adult age groups. Health care workers should give awareness of importance of the fruit and vegetable rich diet. Health care system should be accessible and free for a good surveillance system. Also there is more need for endoscopy units, specialized endoscopists, pathologists and surgeons in Somalia. Future work should focus on relationships between environmental, infections, nutritional, genetic, and epigenetic factors as EC risks in this population.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Opinion/Concept: *Oktay Bulur;* ***Design:*** *Yılmaz Baş;* ***Inspection/Consultancy:*** *Oktay Bulur, Derun Taner Ertuğrul;* ***Data Collection and/or Processing****: Omar Ali Abdi;* ***Analysis and / or Comment:*** *Oktay Bulur, Yılmaz Baş;* ***Resource Screen:*** *Oktay Bulur, Yılmaz Baş;* ***Complete Writing:*** *Oktay Bulur, Oktay Ünsal;* ***Critical Investigation:*** *Kürşat Dal, Derun Taner Ertuğrul;* ***Resources and Fund Provisions:*** *Oktay Bulur;* ***Materials:*** *Oktay Bulur.*

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