The Evaluation of Solid Phase Gastric Emptying in Patients with Behcet's Disease

Behçet Hastalarında Katı Mide Boşalma Zamanının Değerlendirilmesi

Behçet Hastalarında Mide Boşalma / Gastric Emptying in Behçet Disease

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Özet

Amaç: Behçet Hastalığı mukokutanöz sistem, göz, kardiyovasküler sistem, böbrek, akciğer, eklem ve merkezi sinir sistemi tutulumu ile seyredebilen multisistemik bir hastalıktır. Behçet Hastalığında gastrointestinal sistem tutulumu nadirdir. Bu çalışmada mide boşalma sintigrafisi ile Behçet Hastalarında mide boşalma oranlarının araştırılması amaçlandı. Gereç ve Yöntem: Solid mide boşalma oranlarının tesbiti amacıyla 14 Behçet Hastası ile 14 sağlıklı kontrol grubu sintigrafik olarak incelendi. Bir gece açlıktan sonra tüm olgular Tc-99m DTPA ile işaretli yumurta ve kızarmış beyaz ekmekten oluşan solid gıda aldı. Yemek yenilmesinden hemen sonra olgular gamma kamera altına sırt üstü yatırıldı ve 90 dakika boyunca sürekli görüntüler alındı. Mide yarı boşalma zamanı (T ½) ve 60. dakikada midede kalan radyoaktif madde oranı hesaplandı. Bulgular: Behçet Hastalarının ortalama yaşı 41.00±10.25, kontrol grubunun ise 40.57±10.05 idi. Behçet Hastalarının T ½ değeri 85± 61 dakika olarak bulunurken kontrol vakalarında 63±22 dakika olarak bulundu (*P* = .122). 60. dakikada midede kalan radyoaktif madde oranı Behçet Hastalarında ve kontrol vakalarında sırasıyla % 69.3 ± 14.0 ve % 54.6± 22.0 idi (*P* = .035). Tartışma: Mide yarı boşalma zamanları arasında belirgin bir farklılık olmamasına rağmen 60. dakikada midede kalan radyoaktif madde oranı Behçet Hastalarında kontrol grubuna göre belirgin yüksekti. Sonuç olarak gastrik staz Behçet Hastalarında multisistemik tutulum sonucu görülebilir.

Anahtar Kelimeler

Behçet Hastalığı; Mide Boşalma; Gastrik Staz; Sintigrafi

Abstract

Aim: Behcet's disease is a multisystemic disease that includes the mucocutaneous, ocular, cardiovascular, renal, pulmonary, joint and central nervous system involvement. Gastrointestinal system involvement is rare in Behcet's disease. Current study was planned to investigate the rate of gastric emptying in patients with Behcet's disease by using gastric emptying scintigraphy. Material and Method: In order to determine gastric emptying rate of solids, 14 patients with Behcet's disease and 14 healthy controls were studied scintigraphically. After an overnight fast, all subjects ingested a Tc- 99m DTPA labeled solid meal consisted of an egg and toasted white bread. Immediately after ingestion of the meal, subjects were positioned supine under the gamma camera and serial images were recorded continuously for 90 minutes. Half empyting time (t 1/2) and percentage of radioactive material remaining in the stomach at 60 min. were calculated. Results: The mean ages of Behcet's patients was 41.00±10.25 years and 40.57±10.05 years in control group. T ½ of Behçet's patients was found 85± 61 min. and 63±22 min. in control cases (*P* = .122). Percentage of radioactive material remaining in the stomach at 60 min. was 69.3± 14.0 % and 54.6± 22.0 % in Behcet's patients and controls, respectively (*P* = .035). Discussion: Although there was not a significant difference between half gastric emptying times, we determined that percentage of radioactive material remaining in the stomach at 60 min. was significantly greater in Behcet's patients than that in controls. As a result, gastric stasis could be seen in Behçet's patients due to multisystemic involvement.

Keywords

Behcet's Disease; Gastric Emptying; Gastric Stasis; Scintigraphy

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Introduction

Behcet's disease (BD) is a multisystemic disease characterized by recurrent oral and genital aphthous ulcers and involvement of ocular, joint, gastrointestinal, cardiovascular and central nervous systems. Prevelance of disease varies in different regions of the world. Although it has been reported all over the world, Turkey is the country with highest prevelance of BD. It is considered to be some immunological mechanisms induced vasculitis, but the exact pathogenesis is not clear yet. Many reasons such as genetic factors, autoimmunity, endothelial dysfunction are responsible in the etiology.[1,2,3] The hypothesis that BD consists of different sub-groups, which are independent of each other, has been discussed in recent years. The characteristic feature of BD is variability of findings in all systems in the clinical appearance.

One of the most important systemic involvement in BD is involvement of the gastrointestinal tract. The aim of this study is to determine scintigraphically whether or not solid-phase gastric emptying time is prolonged due to stomach involvoment in multisystemic Behcet's disease.

Material and Method

14 patients over 18 years old diagnosed with BD and 14 volunteers as control group without gastric complaints were included in the study. Duration of illness, the drugs they use and areas of disease involvement of patients were recorded. Pregnant and lactating women, individuals with known gastric disease and disease affecting gastric emptying(such as diabetes mellitus) , immunocompromised people (AIDS, malignancies) were not included in the study.

Participants fasted for 8 hours before the test and the drugs that may affect the gastric motility, smoking and alcohol use were banned. One-minute images were recorded for 90 minutes from upper abdominal regions of participants in supine position under the gamma camera (Siemens Symbia-S,Germany) after the administiration of 1 mCi Tc-99m DTPA labelled (Diethylene Triamine Pentaacitic Acid)[4] with egg omelet. Half empyting time (T ½) and the percentage of gastric emptying at 60th minutes (PGE) values were calculated according to the '' Consensus Recommendations for Gastric Emptying Scintigraphy: A Joint Report of the American Neurogastroenterology and Motility Society and the Society of Nuclear Medicine'' published in 2008.[5] T ½ and PGE values were expressed as mean standard deviation. T ½ times and PGE values of BD and control cases were compared statistically with student t test. The p values less than 0.05 were considered significant statistically.

Results

The mean ages was 41.00±10.25 years in Behcet's patients and 40.57±10.05 years in control group. While there were only cutaneous findings of BD in 7 patients, 1 patient had a history of previous thromboembolism, 2 patients had arthritis, 1 patient had a ocular involvoment, 2 patients had ocular and central nervous system involvoment, 1 patient had ocular and central nervous system involvoment and history of previous thromboembolism. Scintigraphic solid gastric emptying times and the remaining activity amounts was quantitatively calculated. When gastric emphyting times were compared, T ½ was found 85± 61 min. in Behcet's patients and 63±22 min. in control cases (*P* = .122). PGE was 69.3± 14.0 % and 54.6± 22.0 % in Behcet's patients and control group (*P* = .035).

Discussion

Gastric emptying scintigraphy which is non-invasive and easily applicable even in children, is a successful method providing information about the physiology and pathophysiology of the stomach.[6] Both solid and liquid gastric emptying time is significantly prolonged when the patient remains in the supine position after meal. But gastric empyting is accelerates if the patient remains upright position immediately after the meal. In our study, participants fed a semi-recumbent position and they were brought in the supine position immediately for measurement of gastric emptying. Thus, we tried to avoid the upright position that affecting the gastric emptying.

Gastric emptying half-life given as 45-110 minutes for solid foods taking into consideration various studies (5). Although there is no study on solid phase gastric emptying time in patients with BD to our knowledge, our results found as 85± 61 min for Behcet's patients and 63±22 min. for control cases. These results were similar with other studies performed for other diseases. Although it may seem like there is a prolonged gastric emptying in Behcet's patients, the difference showed no statistical significance (*P* = .122). When PGE taken on the consideration, it was calculated 69.3 ± 14.0 % in Behcet's patients and 54.6 ± 22.0 % in control group (*P* = .035).

Gastric empyting and motor activity are the results of intergrated complex neural and hormonal effects. The main factors that cause delay in gastric empyting are gastric ulcers, emotional factors, energy density of nutrients, diabetes mellitus and hormonal factors.[7,8]

BD can be seen in entire digestive tract from mouth to anus, not only in the intestines. It is usually seen in the form of aphthous ulcers. Depending on the site of involvement of digestive system, the most common clinical signs and symptoms are odynophagia, nausea, vomiting, abdominal pain, abdominal bloating, diarrhea, and constipation. However lesions are found in the digestive tract approximately in 20% of cases who have such complaints and findings. Gastric involvoment is very rare in BD. Localization of ulcers are often on the antrum. Gastric involvement can present with abdominal pain and gastrointestinal bleeding.[1,9,10]

The main factor affecting the empyting of solid foods is the motor activity of antrum. It was shown in previous studies the antral hypomotility leads to gastric stasis by causing to slown down the emptying of solid foods.[5,9] Also, it was shown that intestinal dysmotility causes delaying in emptying of solid and liquid foods by increasing in the resistance of the small intestine.[9] Therefore, it is possible to obtain an idea for motor functions of antrum by examination of gastric emptying of solid foods. While the vagal system is the most important neural mechanism that affecting the proximal gastric motility, the distal motor functions of the stomach are under the control of both vagal and sympathetic nerve fibers.[7,11,12]

In recent years it was understood that the sympathetic nervous system plays an important role in many diseases which have immunity accused pathogenesis. Although there is an insuffi-

cient number of studies, in the literature autonomic dysfunction was shown in BD on the dermatological perspective. Autonomic nervous system dysfunction was determined in patients with BD in both electrodermal and sympathetic skin response studies.[13] Gastrointestinal tract is one of the most important manifestations of systemic involvement in the BD with significant morbidity and mortality. Avoiding unnecessary interventions is important in this disease because postoperative complications such as wound infection, gastrointestinal bleeding and perforation are common. For this reason non-invasive gastric scintigraphy remains the mainsty as gold standard.

Our study limitation was that there was a prolonged gastric emptying in Behcet's patients, the difference showed no statistical significance, although when PGE was evaluated there was difference between Behcet's disease and control groups. This result could be due to small study group.

In conclusion, it was shown that gastric stasis may be seen in patients with BD, for this reason diet selection and orientation for treatment in early stage are important to prevent gastric morbidity and mortality which problems the patients may encounter in the future.[14]

Competing interests

The authors declare that they have no competing interests.

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