



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

Asena Çiğdem Doğramacı¹, Hülya Yalçın², Didem Didar Balcı¹, Edip Uçar³, Julide Zehra Yenin¹, Ebuzer Kalender²
¹Department of Dermatology, ²Department of Nuclear Medicine, ³Department of Internal Medicine, Mustafa Kemal University, Hatay, Turkey

Özet

Amaç: Behçet Hastalığı mukokutanöz sistem, göz, kardiyovasküler sistem, böbrek, akciğer, eklem ve merkezi sinir sistemi tutulumu ile seyredabilen 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=0.122). 60. dakikada midede kalan radyoaktif madde oranı Behçet Hastalarında ve kontrol vakalarında sırasıyla % 69.3 ± 14.0 ve % 54.6± 22.0 idi (p=0.035). **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 emptying 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 Behcet's patients was found 85± 61 min. and 63±22 min. in control cases (p=0.122). 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=0.035). **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 Behcet's patients due to multisystemic involvement.

Keywords

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

Introduction

Behçet'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. Prevalence of disease varies in different regions of the world. Although it has been reported all over the world, Turkey is the country with highest prevalence 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 involvement in multisystemic Behçet'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 administration of 1 mCi Tc-99m DTPA labelled (Diethylene Triamine Pentaacetic Acid) [4] with egg omelet. Half emptying time ($T_{1/2}$) 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]. $T_{1/2}$ and PGE values were expressed as mean standard deviation. $T_{1/2}$ 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 Behçet'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 involvement, 2 patients had ocular and central nervous system involvement, 1 patient had ocular and central nervous system involvement and history of previous thromboembolism. Scintigraphic solid gastric emptying times and the remaining activity amounts was quantitatively calculated. When gastric emptying times were compared, $T_{1/2}$ was found $85 \pm$

61 min. in Behçet's patients and 63 ± 22 min. in control cases ($p=0.122$). PGE was 69.3 ± 14.0 % and 54.6 ± 22.0 % in Behçet's patients and control group ($p=0.035$).

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 emptying 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 Behçet'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 Behçet's patients, the difference showed no statistical significance ($p=0.122$). When PGE taken on the consideration, it was calculated 69.3 ± 14.0 % in Behçet's patients and 54.6 ± 22.0 % in control group ($p=0.035$).

Gastric emptying and motor activity are the results of integrated complex neural and hormonal effects. The main factors that cause delay in gastric emptying 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 areodynophagia, 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 involvement 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 emptying 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 slow 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 insufficient

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 mainstay as gold standard.

Our study limitation was that there was a prolonged gastric emptying in Behçet's patients, the difference showed no statistical significance, although when PGE was evaluated there was difference between Behçet'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.

References

- Örmeci N. Behçet hastalığında gastrointestinal tutulum. *Türkderm* 2009;43(2):65-8.
- Cakmak SK, Cakmak A, Gul U, Sulaimanov M, Bingol P, Hazinedaroğlu MS: Upper gastrointestinal abnormalities and helicobacter pylori in Behçet's disease. *Int J Dermatol* 2009;48:1174-6.
- Akman A, Alpsoy E. Behçet hastalığı: Etiyopatogeneze güncel bilgiler. *Türkderm* 2009;43(2):32-8.
- Kim JH, Lee HS, Kim MS, Lee JM, Kim SK, Zo JI. Balloon dilatation of the pylorus for delayed gastric emptying after esophagectomy. *Eur J Cardiothorac Surg* 2008;33(6):1105-11.
- Abell TL, Camilleri M, Donohoe K, Hasler WL, Lin HC, Maurer AH et al. Consensus recommendations for gastric emptying scintigraphy: a joint report of the American Neurogastroenterology and Motility Society and the Society of Nuclear Medicine. *J Nucl Med Technol* 2008;36(1):44-54.
- Maurer AH, Parkman HP. Uptake on gastrointestinal scintigraphy. *Semin Nucl Med* 2006;36:110-8.
- Camilleri M, Brown ML, Malagelada JR. Relationship between impaired gastric emptying of a digestible solid meal in normal subjects. *Br J of Radiology* 1988;61:12-8.
- Günel O, Deniz M, Ghandouri S, Aslaner A. İki aşamalı kolorektal distansiyonun mide boşalma hızına etkisi. *Türkiye Klinikleri J Gastroenterohepatol* 2004;15:112-6.
- Ebert EC. Gastrointestinal manifestations of Behçet's disease. *Dig Dis Sci* 2009;54:201-7.
- Yi SW, Cheon JH, Kim JH, Lee SK, Kim TI, Lee YC et al. The prevalence and clinical characteristics of esophageal involvement in patients with Behçet's disease: a single center experience in Korea. *J Korean Med Sci* 2009;24:52-6.
- Khoo J, Rayner CK, Jones KL, Horowitz M. Pathophysiology and management of gastroparesis. *Expert Rev Gastroenterol Hepatol* 2009;3:167-81.
- Verne GN, Soldevia-Pico C, Robinson ME, Spicer KM, Reuben A. Autonomic dysfunction and gastroparesis in cirrhosis. *J Clin Gastroenterol* 2004;38(1):72-6.
- Kaymak Karatas G, Onder M, Meray J. Autonomic nervous system involvement in Behçet's disease. *Rheumatol Int* 2002;22:155-9.
- Bouras EP, Scolapio JS. Gastric motility disorders: Management that optimizes nutritional status. *J Clin Gastroenterol* 2004;38(7):549-57.

How to cite this article:

Doğramacı AÇ, Yalçın H, Balcı DD, Uçar E, Yenin JZ, Kalender E. The Evaluation of Solid Phase Gastric Emptying in Patients with Behçet's Disease. *J Clin Anal Med* 2015;6(4): 446-8.