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Small Bowel Obstruction due to Phytobezoar

Fitobezoara Bağlı İnce Bağırsak Tıkanıklığı

Metin Şenol[1], Mehmet Ali Gök[2]

[1] İstanbul Sağlık ve Teknoloji Üniversitesi Tıp Fakültesi, Genel Cerrahi Anabilim Dalı, İstanbul, Türkiye
[2] Sağlık Bilimleri Üniversitesi, Kartal Dr Lütfi Kırdar Şehir Hastanesi, Genel Cerrahi Kliniği, İstanbul, Türkiye.

ABSTRACT

Introduction: Bezoar is the accumulation of indigestible food or material in the gastrointestinal system. Bezoars have different names according to the accumulated material. Phytobezoar is the accumulation of indigestible food, fruit fibers and seeds. Most common cause of phytobezoar is the persimmon fruit. Small bowel obstructions caused by bezoars may account for 0.4-4%of total cases. The aim of this study is to evaluate the patients who were diagnosed and operated with small bowel obstruction duo to the phytobezoar.
Method: In this study, data of 20 patients have been evaluated retrospectively who were operated with small bowel obstructions associated with phytobezoars in between December2014 and January2019.
Results: Median age of patients who were enrolled in the study was 61.3. Oldest patient was 77 years old whereas youngest was 35. Out of 20 patients, 11 were male and 9 were female. 17 of the patients were admitted during winter and all had a history of eating excess amount of persimmon fruit. Half of the patients had a history of gastric surgery. Of these 20 patients diagnosed with phytobezoar in their small bowels, 11 had phytobezoar also in their stomach. 9 of the patients were detected phytobezoar only in their small bowels.Milking was the common technique for small intestinal phytobezoars and done to the 14 patients.
Discussion and Conclusion: Phytobezoar might be the reason of obstruction in patients who had small intestine obstruction; either with a history of previous gastric surgery or not, especially in regions where persimmon fruit is grown and consumed frequently.
Keywords: phytobezoar, small bowel obstruction, persimmon

ÖZ

Giriş ve Amaç: Gastrointestinal sistemde sindirilemeyen gıdaların ya da maddelerin birikmesine bezoar adı verilir. Bezoarlar, içerisinde biriken materyale göre farklı isimler alırlar. Sindirilememiş gıdalar, meyve lifleri ve çekirdeklerinin birikimine fitobezoar denir.Fitobezoara en çok neden olan meyve de (persimmon) Trabzon hurmasıdır. Bezoara bağlı ince bağırsak tıkanıklığı %0,4-4 oranında görülür. Bu çalışmanın amacı fitobezoara bağlı ince bağırsak tıkanıklığı tespit edilen ve opere edilen hastaların değerlendirilmesidir.
Yöntem ve Gereçler: Bu çalışmada Aralık 2014 ile Ocak 2019 tarihleri arasında hastanemize ileus bulgularıyla başvuran ve yapılan tetkikleri sonucunda fitobezoara bağlı ince bağırsak tıkanıklığı tespit edilen 20 hastanın verileri retrospektif olarak değerlendirilmiştir..
Bulgular: Hastaların yaş ortalaması 61,3'dü. En yaşlı hasta 77 yaşındayken en genç hasta da 35 yaşındaydı. Hastaların %55'i (11) erkek iken %45'i (9) kadındı. Sekiz hastaya (%40) operasyon öncesinde gastroskopi yapıldı. Hastaların %85'i (17) kış mevsiminde başvurmuştu ve bu hastaların hepsinde fazla miktarda, bir kış meyvesi olan Trabzon hurması yeme öyküsü vardı. Hastaların yarısının öz geçmişinde geçirilmiş mide ameliyatı vardı. İnce bağırsağında fitobezoar olan bu yirmi hastanın 11 tanesinde aynı anda midede de fitobezoar görüldü. Hastaların 9 tanesinde sadece ince bağırsakta fitobezoar vardı. İnce bağırsaktaki fitobezoarlar için en sık uygulanan yöntem sıvazlamaydı ve 14 hastaya uygulandı.
Tartışma ve Sonuç: Trabzon hurması (persimmon) meyvesinin endemik olarak yetiştiği ve sıkça tüketildiği bölgelerde, ince bağırsak tıkanıklığı tespit edilen hastalarda; geçirilmiş mide cerrahisi öyküsü olsun ya da olmasın, tıkanıklığın nedeninin fitobezoar olabileceği akılda tutulmalıdır.
Anahtar Kelimeler: fitobezoar, ince bağırsak tıkanıklığı, Trabzon hurması

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Correspondence: Mehmet Ali Gök, Sağlık Bilimleri Üniversitesi, Kartal Dr Lütfi Kırdar Şehir Hastanesi, Genel Cerrahi Kliniği İstanbul - Türkiye.
E-mail: dr.mehmetaligok@gmail.com

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INTRODUCTION

A bezoar is the accumulation of indigestible food or material in the gastrointestinal system. Bezoars have different namesaccording to the material that had accumulated which are: phytobezoar, trichobezoar, pharmacobezoar and lactobezoar. Accumulation of indigestible food, fruit fibers and seedsis called phytobezoar. Accumulation of hair in the gastrointestinal system is called trichobezoar, of medication is pharmacobezoar and of remnants of milk is lactobezoar (1). Most common cause of the phytobezoar is the persimmon fruit (2).

Small bowel obstructions are very common in surgical practice emergencies. The most common cause of small bowel obstructions are brids and intraabdominal adhesions due to post abdominal surgery. Besides that, tumors, invaginations and strangulated hernias also take place in etiology. Obstructions due to bezoars, although not very common as others,may account for 0.4-4% of all small bowel obstruction cases (3).

Phytobezoars are most common in stomach and may also be seen in small bowel and colon too. Most common reason for phytobezoar formation is a previous gastric surgery. The risk of phytobezoar is higher with patients who had surgery for peptic ulcer, who had pyloroplasty, vagotomy and gastroenterostomy. In addition to this, pyhtobezoars may also occur in patients who have associated diseases such as hypothyroidism, diabetes mellitus, dental issues and chewing problems (4).

MATERIAL AND METHOD

In our study, 20 patients were evaluated who had been admitted to our hospital's emergency service or general surgery department between December 2014 and January 2019, with acute mechanical bowel obstructions and after the examinations, they were diagnosed with small bowel obstructions associated with phytobezoars. All patients had mechanical intestinal obstruction symptoms due to the phytobezoar in the small bowel.

6 patients, who had consulted with stomach pain and dyspeptic complaints and were diagnosed with phytobezoar only in their stomach, without any bowel obstructions, were excluded from the study. The parameters such as demographic data of the patients, history of any gastric surgery, preoperative examinations, localization of phytobezoar, surgical techniques applied at the operation and cause of phytobezoar were examined.

Statistical Package for the Social Sciences 2.0 (SPSS 2.0) (International Business Machines, Armonk, NY, USA) software program was used for the evaluation of all statistical data. Continuous variables collected by measurement were evaluated in accordance with descriptive statistical methods (mean), categorical variable numbers obtained by counting (i.e. gender, age) and frequency of the disease (percentage).

RESULTS

Median age of patients who were enrolled in the study was 61.3; oldest patient was 77 years old whereas youngest was35 years old. Of the patients,55% (11) were male and

45% (9) were female. Preoperative CT was used to diagnose patients that were admitted with acute mechanical bowel obstructions. 8 patients (40%) were subjected to gastroscopy preoperatively. 85% (17) of the patients were admitted during winter and all these patients had a history of eating excess amount of persimmon which is a winter fruit. Only 3 patients were admitted during summer. Half of the patients had a history of gastric surgery. All 3 patients admitted during summer have also had previous gastric surgery.

Of these 20 patients diagnosed with phytobezoar in their small intestines, 11 had phytobezoar also in their stomach. 9 of the patients were detected phytobezoar only in their small intestines and there were none in their stomach. 11 patients diagnosed with phytobezoar also in their stomach were subjected to gastrotomy. 4 of the 9 patients diagnosed with phytobezoar only in their small intestines were applied milking and 5 were applied phytobezoar extraction with enterotomy. 10 of the patients with phytobezoar both in their stomach and small bowels, underwent gastrotomy and milking whereas only 1 of them had both gastrotomy and enteretomy operation. The average period of hospitalization of the patients was 4.7 days. Postoperative mortality was not reported in any cases.

Table 1: **Demographic Data, Bezoar Sites, Surgical Techniques, Season ect. of All Patients**

		Min – Max (Median)	**Mean ± SD**
Age (years)		35 – 77 (63)	61.3 ± 11.97
Length of hospitalization (days)		2 – 7 (5)	4.7 ± 1.59
		n	**%**
Sex	**Male**	11	55
	Female	9	45
Season	**Winter**	17	85
	Summer	3	15
Surgical technique	**Milking**	4	20
	Enteretomy	5	25
	Gastrotomy + Enteretomy	1	5
	Gastrotomy + Milking	10	50
Bezoar site	**Small Bowel**	9	45
	Gastric + Small Bowel	11	55
History of prior surgery		10	50
Persimmon		17	85
Tomography		20	100
Endoscopy		8	40

DISCUSSION

Bezoar is the accumulation of indigestible food and foreign particles in the gastrointestinal system. Bezoars are most commonly seen in the stomach. In patients with a history of gastric operations such as phyloroplasty and gastroenterostomy, bezoars are second commonly observed in small bowels due to easy passage through the small bowel. These indigestible and cumulated materials are called phytobezoar if consist of fruit seeds and fibers; trichobezoar if consists of hair; pharmacobezoar if caused by medications; lactobezoar if formed from remnants of milk and lithobezoar if consist of stones. Trichobezoars are usually observed in young women with coexistence of psychiatric disorders such as trichophagia (hair eating disorder) (5).

Persimmon fruit is the most common cause of phytobezoar in the world. The name of the phytobezoar, specific for persimmon fruit is called diospyrobezoar. Persimmon fruit is mostly grown in Asia and Mediterranean countries. It is rich in tannins which form an adhesive-like substance when they encounter acids and form the basis of diospyrobezoar. Later on, seeds and fibers of the fruit stick to this base, thus forming diospyrobezoar (2). Since persimmon is a winter fruit, phytobezoar cases are mostly observed in winter season (6). In our study, it was also observed that 85% of the phytobezoar cases were in winter and due to excess eating of persimmon fruit.

Clinical findings of phytobezoar cases are the same with the findings of mechanical bowel obstruction. Complaints such as stomach pain, nausea, vomiting and abdominal distention are observed. Air-fluid levels associated with bowel obstruction can be seen on the abdominal radiography of those patients. However, the reason for the obstruction cannot be detected with abdominal radiography. The most common cause of small bowel obstructions are brids and intraabdominal adhesions due to post abdominal surgery. Besides that, tumors, invaginations, strangulated hernias and bezoars also take place in etiology (7).

The most effective method for determining the etiology of phytobezoars is Computed Tomography (CT). The sensitivity of CT is reported as 90% and specificity as 57%. Usually, there is a typical image in CT. Air bubbles and, fruit seeds within round mass in gastrointestinal system suggest presence of phytobezoar (4).

If a phytobezoar causing mechanical bowel obstruction is detected in the CT, stomach should also be examined carefully because there is a very high probability that a patient with a phytobezoar in the small intestine has one in the stomach too. If the patient has phytobezoar in the stomach, preoperative treatment with endoscopic methods may be tried. If successful, patient skips the gastrotomy procedure (7). If unsuccessful, gastrotomy should also be performed during the surgical operation. In the 55% of our cases, phytobezoar was present in both stomach and small intestines of the patients.

In general, phytobezoars are observed more in patients with history of gastric surgery

as truncalvagotomy, partial gastrectomy and gastroenterostomy. Poor dental status and insufficient chewing of food may also contribute to the formation of phytobezoars (8). These patients are advised not to eat fruits like persimmon, orange, grapefruit too much at one go. Furthermore, phytobezoar may be detected in patients with diabetes mellitus and hypothyroidism, due to slowing down of gastric emtying (9). In our study, 50% of the patients had a history of gastric surgery because of peptic ulcer.

There are three different methods in treatment of phytobezoars, namely pharmacologic, endoscopic and surgical methods. In pharmacological treatment, patient has been given pineapple juice or Coca-Cola© (The Coca-Cola Company, Atlanta, Georgia, USA) to enable the softening and dissolving of the phytobezoar. This method can be applied for gastric phytobezoars (10). Another method is the endoscopic fragmentation of the phytobezoar and then extraction of it. Disadvantage of this method is the risk of a journey of one of the fragments to small bowel after passing from pyloris and causing obstruction there (11). Endoscopic methods may firstly be tried for elder patients with any associated disease who cannot be treated with surgical approach.

Surgical treatment is administered if conservative methods are not successful. It has been advised not to lose time with conservative methods to avoid fluid deficiency and electrolyte imbalance and thus harming the patient (12). Even though laparoscopic methods are administered in recent years, laparotomy is currently the most applied method. Gastrotomy can be applied for the phytobezoar in stomach whereas either enterotomy or milking may be administered for the phytobezoar in the small bowel. In the milking method, phytobezoar in the small bowel can be broken up by pressing externally and then advanced in the small intestine, passed through ileocecal valve and removed out by moving through the colon (13). This is the most common used and most reliable method in treatment of small bowel phytobezoars. However, it has been argued that this method may result in postoperative brids due to touching and compressing the whole bowel surface during the milking. Another surgical option is the removal of phytobezoar by enterotomy. As a matter of fact, enterotomy is the first option for some surgeons (14). In our study, for the 14 of 20 patients suffering phytobezoar related small bowel obstruction, milking method has been administered and 6 patients had enterotomy.

As a conclusion, in regions where persimmon fruit is endemically grown and consumed frequently, it should be kept in mind that phytobezoar might be the reason of the obstruction in patients who have undergone small bowel obstruction; either with a history of previous gastric surgery or not.

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