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SELÇUK TIP DERGİSİ

Primer İnce Barsak Tümörlerinde Acil Cerrahi

Primary Small Intestinal Tumor Cases in Emergency Surgery

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Özet

İlerlemiş tanı yöntemlerine rağmen ince barsak tümörlerinin teşhisi zordur ve genellikle tanı esnasında ilerlemiş olarak bulunurlar. Bu kanserler sinsi olarak seyreden karın ağrısı ve kilo kaybına veya kanama, obstrüksiyon ve perforasyon gibi cerrahi gerektiren acil durumları oluşturabilirler. Acil şartlarda cerrahi işlem uyguladığımız primer ince barsak tümörlü 29 hastanın kısa dönem sonuçlarını ve klinik deneyimlerimizi sunmayı amaçladık. Kliniğimizde 2005-2011 yılları arasında acil şartlarda ameliyat edilen 29 ince barsak tümörlü hastanın verileri retrospektif olarak incelendi. Hastaların demografik, klinik, radyolojik ve patolojik özellikleri araştırılan parametrelerdi. Hastaların 16'sı erkek, 13'ü kadın olup, yaş ortalamaları 62 (35-80) idi. Tüm vakalar acil şartlarda ameliyat edildi. Vakaların 19'u da instestinal obstrüksiyon, 6'sında invajinasyon, 6'sında perforasyon ve 1'inde ise mezenterik iskemi saptandı. Tümör yerleşimi 14 hastada ileumda, 10 hastada jejunumda ve 5 hastada ise duodenum olarak saptandı. Patolojik tanı olarak en sık 7 olgu GİST ve 7 olgu adenokarsinomdu. İnce barsak rezeksiyonu ve anastomoz en sık uygulanan cerrahi işlemdi. Ameliyat sonrası dört hastada cerrahi alan infeksiyonu, üç hastada anastomoz kaçağı görüldü. Erken postoperatif dönemde beş hastada mortalite izlendi. İnce barsak tümörleri çok nadir olarak görülür. Bulgular spesifik değildir ve tanı sürecinde daha ileri yöntemlere gereksinim duyulmaktadır. Genellikle acil cerrahi tedavi gerektirecek klinik tablo oluşturmaktadır. Tedavinin başlama zamanı sağkalımı belirleyen önemli bir etkendir.

Anahtar kelimeler: Akut karın, acil cerrahi, ince barsak tümörü.

Abstract

Despite advanced diagnostic methods, diagnosis of small intestinal tumors is hard and they are generally detected at an advanced stage. These cancers may form emergency cases that need to be addressed surgically like bleeding, obstruction, and perforation or insidious abdominal pain and weight loss. We present our clinical experiences and the short term results of 29 patients with primary small intestinal tumors who had undergone emergency surgical procedures. The data of these 29 patients treated at our clinic between 2005 and 2011 were retrospectively evaluated. Study parameters included the patients' demographic, clinical, radiological, and pathological characteristics. All the cases underwent emergency surgery. 16 of the patients were male, while 13 were female, and their mean age was 62 (35-80). Intestinal obstruction was detected in 19 of the cases, while perforation in 6, and mesenteric ischemia in 4. Tumors were located in the ileum in 14 patients, in the jejunum in 10, and in the duodenum in 5. The most frequent pathological diagnoses were GIST with 8 cases and adenocarcinoma with 8 cases. The most frequently performed surgical procedures were small intestinal resection and anastomosis. Four patients developed surgical site infection and three had anastomotic leaks in the post-op period. Mortality was seen in five patients in the early post-op period. Tumors of the small intestine are very rare. The findings are non-specific and advanced diagnostic methods are needed during the diagnostic process. They generally cause clinical conditions that necessitate emergency surgery. The timing of the treatment is a significant factor determining survival.

Key words: Acute abdomen, emergency surgery, small bowel tumor.

INTRODUCTION

Small bowel tumors (SBT) represent 0.3 % of all tumors, fewer than 2 % of all gastrointestinal malignances (1,2), with an age-adjusted incidence of 1 per 100.000 and a prevalence of 0.6 % (3). Approximately, almost forty different histological types of both benign and malignant tumors have been identified (4). Benign small intestinal tumors (leiomyoma, lipoma, hamartoma or desmoid tumor) usually are asymptomatic but may present with complications. Primary malignancies of the small intestine, including adenocarcinoma, leiomyosarcoma, carcinoid, and lymphoma, are often symptomatic and may present with intestinal obstruction, jaundice, bleeding or pain.

Despite advanced diagnostic methods, diagnosis of small intestinal tumors is hard and they are generally detected at an advanced stage. These cancers may form emergency cases that need to be addressed surgically like bleeding, obstruction or perforation or insidious abdominal pain and weight loss. We present our clinical experiences and the short term results of 29 patients with primary small intestinal tumors who had undergone emergency surgical procedures.

MATERIALS AND METHODS

The data of these 29 patients treated at our clinic between 2005 and 2011 were retrospectively evaluated. Study parameters included the patients' demographic, clinical, radiological and pathological characteristics. All patients had histologically confirmed SBT and required an emergency treatment within 24 h.

Patients with tumor at the ampulla of Vater, pancreatic head and ileocecal valve and metastatic cancer were excluded from the study. Only those with primary tumor arising from the duodenum, jejunum or ileum were included.

The following criteria were used for defining a gastrointestinal primary

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lymphoma: normal WBC count; absence of mediastinal adenopathy on chest X-ray; no pathologic finding beyond the intestinal segment; regional mesentery; and absence of liver or splenic involvement.

Operation was defined as radical if the tumor was completely removed both grossly and microscopically and as palliative if the patients had distant metastasis at presentation, gross residual tumor at surgery or positive margins microscopically.

RESULTS

Clinical and diagnostic features

While 16 of the patients were male, 13 were women and their mean age was 62 (35- 80). All the patients presented to the emergency department. 19 patients had intestinal obstruction, 6 had perforation and 4 had gastrointestinal bleeding. 6 of the patients with intestinal obstruction had invagination (Figure 1). All the patients presented with bleeding were evaluated by a surgeon because of non-controllable bleeding or re-bleeding in spite of conservative treatment and were operated within 24 hours following the initial evaluation (Table 1).

Pre-op diagnostic methods included plain abdominal graphy for 29 (100 %) patients, abdominal ultrasonography (USG) for 25 (86 %) patients, computerized abdominal tomography (CT) for 15 (51 %) patients and gastroduodenoscopy for 4 (13.7 %) patients. Pre-op screening methods revealed appearance of mass in the small intestines in 15 patients. Tumoral mass was seen in 10 of these patients through CT (Figure 2), 3 through USG, and 2 through gastroduodenoscopy. Gastroduodenoscopy revealed duodenal mass in two of the bleeding patients. Direct abdominal graphy and USG were useful in demonstrating mechanical obstruction or perforation (Figure 3).

Tumor Location

Tumor location was determined to be the ileum in 14 patients, the jejunum in 10 and the duodenum in 5 (Table 2).

Surgical therapy

While radical surgery was performed on 24 of the patients, 5 patients were regarded to be inoperable and palliative procedures were carried out. Five of the patients had abdominal metastasis as seen during the laparotomy. Wedge resection was performed on 2 patients with duodenal stromal tumor. Truncal vagotomy + antrectomy + partial duodenectomy and Roux-en-Y gastrojejunostomy were performed on two of the 3 patients with Brunner tumor in the duodenum, while one had the Whipple operation (Table 3).

Pathology

All the patients had postoperative histopathological diagnoses. 8 (27.4 %) had gastrointestinal tumor, 8 (27.4 %) had adenocarcinoma, 4 (13.7%) had neuroendocrine carcinoma, 3 (10.3 %) had Brunner tumor, 3 (10.3 %) had inflammatory fibrinoid polyp and 3 (10.3 %) had lymphoma. While the tumor was mostly located in the ileum in the GIST cases, it was originated from the jejunum in the adenocarcinoma cases (Table 4).

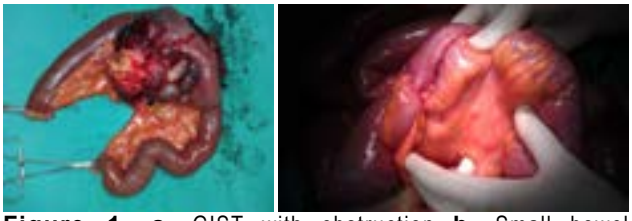

Figure 1. a. GIST with obstruction **b.** Small bowel adenocarcinoma presented with obstruction

Tablo 1. Signs and symptoms in patients with small bowel tumors.

Sign/Symptom	n (%)
Abdominal pain	24 (82.7)
Nausea/vomiting	20 (68.9)
Weight loss	15 (51.7)
Abdominal distention	20 (68.9)
Palpable abdominal mass	5 (17.3)
Gastrointestinal bleeding	4 (15)
Bowel perforation coexistent peritonitis	6 (20.6)

Morbidity and Mortality

Four patients contracted post-up surgical site infection, 3 had anastomotic leak and 2 had pneumonia. The average hospitalization period was 8.8 (5- 22) days. Post-op mortality was seen in five patients (17 %) and most of them were cases that had palliative surgery (Table 5).

DISCUSSION

Although 75 % of the tumors found at biopsy are benign, most of the symptomatic lesions detected during surgery are malignant. Benign tumors include leiomyomas, adenomas, lipomas and hamartomas. Malignant tumors include adenocarcinomas, carcinoids and lymphomas. Other types of small bowel malignant neoplasms are stromal tumors, which are considered as tumors with variable malignant power, and metastatic diseases by malignant melanoma, bronchogenic tumors, breast cancer and intrabdominal cancers (5).

SBT are characterised by the non-specific nature of the symptoms they produce (6). It has previously been reported that the preoperative diagnosis rate was only 38 % (7) for small intestinal tumor. This allows tumours to grow and reach an advanced stage before detection, because the content of the small bowel is liquid and can pass through even the tiniest openings (6). In the present series, one of the most useful diagnostic tests was CT scans.

The clinical signs and symptoms may vary with the tumor site, size and existence of ulceration. Abdominal indisposition, hemorrhage, abdominal mass and weight loss were the main primary symptoms for this group of patients. These atypical complaints and the lack of effective available diagnostic methods make it relatively difficult to make an accurate diagnosis before laparotomy.

Because small-bowel tumors are relatively rare compared with other neoplasms of the gastrointestinal tract, the following several factors have been proposed to explain or understand this disparity:

1) A decrease in mechanical and/or chemical inflammation of the

Tablo 2. Sites of origin in patients with small bowel tumors

Sites of origin	n (%)
Duodenum	5 (17.3)
Jejunum	10 (34.6)
Ileum	14 (48.2)

Tablo 3. Surgical procedure

Procedure	n (%)
Disease for emergent procedure	
Bowel obstruction	19 (65)
Bowel perforation	6 (20.6)
Gastrointestinal bleeding	4 (15)
Radicality of procedure	
Radical[1]	24 (82.7)
Palliative[2]	5 (17.3)
Surgical procedure	
Segmental bowel resection	25 (86.2)
Right hemi-colectomy	2 (6.9)
Pancreaticoduodenectomy	1 (3.4)
Enteric bypass	1 (3.4)

[1]Radikal resection: Negative margin, resection of all gross diseases, en bloc local resection when indicated and no documented metastasis. [2]Palyatif resection: Positive margin, gross residual disease or intrabadominal metastasis

mucosa because of the liquidity and alkaline pH of the small-bowel contents;

2) The relatively rapid transit of the small-bowel chyme, thus allowing a shorter contact time of luminal carcinogens with the enterocytes;

3) The rapid turnover of epithelial cells outpacing potential growth and development of neoplastic cells;

4) A lower luminal bacterial load, particularly of anaerobes, which results in less total production of potential carcinogens;

5) The apparent enhanced ability of small-bowel mucosa to metabolize and/or detoxify certain dietary components or breakdown products that may be carcinogenic and

6) The elaborate lymphoid tissue network surrounding the small bowel and in particular, its ability to secrete immunoglobulin A, which may confer increased immunologic-related tumor control (8, 9).

To the best of our knowledge, there are a few published works specifically based on emergency surgery of SBT and the present series is the largest published report focusing on the problem of clinical presentation.

In Brophy's series 67 % of patients presented as surgical emergencies (10), compared with 46 % reported by North (11), 33 % reported by Wilson (12) and 25 % reported by Miles (13).

The present study showed that there is a correlation between small bowel tumours and clinical emergency presentation,: gastrointestinal stromal tumours (GIST) cause obstructions; neuroendocrine carcinomas cause obstructions and ischemia; lymphomas cause perforations; inflammatory fibroid polyp cause intusseption; adenocarcinomas can create perforations or obstructions and Brunner's gland hamartomas causes perforation and obstruction.

Tablo 4. Histopathological type

Histopatolojik type	n (%)
Adenocarcinoma	8 (27.3)
GIST	8 (27.3)
Neuroendocrine carcinoma	4 (13.7)
Lymphoma	3 (10.3)
İnflammatory fibroid polyp	3 (10.3)
Brunner's gland hamartoma	3 (10.3)

GIST: Gastrointestinal stromal tumor.

Tablo 5. Complications after operation

Complications (n= 12)	n (%)
Wound infection	5 (41.7)
Anastomotic leak	4 (33.3)
Pneumonia	2 (16.6)
Evisceration	1 (8.3)

Diagnostic modalities used for assessing the existence of small-bowel tumors include endoscopy (for lesions of the duodenum and proximal jejunum) and radiographic imaging (computer tomography and small-bowel series or enteroclysis). Lesions located distal to the Treitz ligament pose a unique diagnostic challenge for the endoscopist because of the length of the small bowel. Capsule endoscopy is a recently available clinical technology that has been shown to be safe and effective in the diagnosis of small-bowel abnormalities, including neoplasms (14, 15). Nevertheless, experience with this technique is still limited and developing. Urinary excretion of 5-hydroxyindoleacetic acid and radionuclide localization scans can be useful for the diagnosis of carcinoid tumors (16). Elevated carcinogen embryonic antigen may indicate an adenocarcinoma but usually in the presence of liver metastases (17). Often none of the mentioned diagnostic tools are fruitful and because of progressive symptoms, diagnostic laparoscopy or exploratory laparotomy may be indicated for definitive diagnosis and treatment (18).

Catena et al showed that emergency primary small bowel tumors located mostly in jejunum, followed by ileum and duodenum. In their study the most prevalent histological type is GIST (6). Our data demonstrate that ileum is the most common site (48.2 %), followed by jejunum (34.6 %), duodenum (17.3 %), and that the most prevalent histological type is adenocarcinoma (27,3 %) and GIST (27.3 %), followed by neuroendocrin carcinoma(13,7 %), malignant lymphoma (10,3 %), İnflammatory fibroid polyp (10.3 %) and Brunner's gland hamartoma (10.3 %).

The primary treatment of small bowel malignant tumors is surgical, which consists of segmental resection including wide excision of the lymph node bearing mesentery. Radical resection is often chosen for

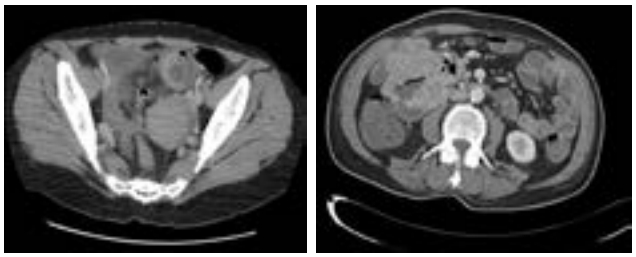

Figure 2. a. Demonstrative CT image of the intussusception. **b.** CT image shows a small intestinal mass

Figure 3. Air fluid levels are seen in the abdominal X-ray image of the patient.

relatively early stage patients, whereas the palliative operation is applied to very late stage patients. Of the 67 patients who were treated at the M.D. Anderson Cancer Center between 1967 and 1991, 36 patients (54 %) underwent curative resection, 23 patients (34 %) underwent palliative surgery (19). In our report, radical (82.7 %) or palliative resections (17.3 %) were performed for all patients.

If the tumor is in the third or fourth portion of the duodenum, segmental resection may be possible. For certain duodenal tumors with invasion into the pancreas, a pancreaticoduodenectomy may be indicated. Ileal lesions may require a right hemicolectomy. As much ileum as possible should be preserved at the time of resection to limit the loss of vitamin B 12 and secondary malabsorption. Operative mortality in the treatment of malignant small bowel tumors varies between 2 % to 10% in most series (20), which is consistent with the 17 % perioperative mortality noted in this study.

The prognosis for malignant small bowel tumors depends on the extension of tumor cells through the bowel wall and the metastatic spread to lymph nodes and distant organs.

In conclusion, SBTs are rare, the symptoms are often non-specific, and the accuracy of different diagnostic tests remains to be improved. SBT are often discovered at a late stage and can create surgical emergencies. The only definitive treatment of choice for primary tumors of the small bowel is surgery. The timing of the treatment is a significant factor determining survival.

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