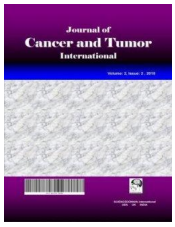

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Primary Gastrointestinal Non-Hodgkin Lymphoma Diagnosed after Emergency Surgery

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Authors' contributions

This work was carried out in collaboration between all authors. Author MA designed the study, performed the statistical analysis, wrote the protocol and first draft of the manuscript. Authors CO and MC managed the analyses of the study. Author RSA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aim: The present retrospective study aims to evaluate the data of 15 patients who required immediate surgical intervention because of obstruction and/or perforation due to primary gastrointestinal Non-Hodgkin lymphoma.
Methods: Patients who underwent surgical intervention due to gastrointestinal system bleeding, radiological evidence of perforation or intestinal obstruction and subsequently diagnosed with gastrointestinal lymphoma at Department of General Surgery, Kocatepe University during August 2007 to September 2016 were examined retrospectively. Their medical records, clinical histories, symptoms, pathological reports, and treatment modalities were analysed.
Results: There were 15 patients with primary gastrointestinal system lymphomas (male: 8, female: 7) with their mean age of 69.7 years (40-90). Tumors were determined in stomach for 7 (46.7%) patients (Kardia: 3, Antrum: 3, Corpus: 1), in jejunum for one (6.6%), in ileum for 4 (26.7%), in right colon for 2 (13.3%), and in multiple organ involvement for one patient (6.6%). Clinical manifestations were nausea and/or vomiting in 7 patients (46.6%); loss of appetite in 8 patients

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(53.3%); abdominal pain in 11 patients (73.3%); and weight loss in 10 patients (66.6%). The most common pathological subtype was diffuse large B-cell lymphoma (86.6%). All 15 patients underwent surgical treatment and received postoperative chemotherapy. The mean follow-up period of the patients was 68 months (24-108 months). Only one patient (6.6%) died in the postoperative period.

Conclusion: Initial presentation of primary gastrointestinal tract Non-Hodgkin lymphoma may be an obstruction, bleeding, or perforation. Clinicians and surgeons should keep this in mind while assessing the patients with mechanic bowel obstruction.

Keywords: Lymphoma; B-cell; ileus; perforation; bleeding; emergency.

1. INTRODUCTION

Non-hodgkin lymphoma (nhl) is a well-known hematologic malignancy. The gastrointestinal (gi) tract is the most commonly involved extranodal area. Nhl is a group of diseases with different morphology, immunophenotype, genetics, and clinical features. The incidence of extranodal lymphomas in nhl has a considerable rate as high as 30–50%. Primary gastrointestinal non-hodgkin lymphoma (pgi nhl) is the most common extranodal nhl, accounting for 30–45% in all extranodal nhls [1,2]. Lymphomas can involve any part of the gi tract from oral the cavity to rectum. Surgical resection can play an essential role in the diagnosis and treatment of nhl involving the gi tract. Clinical features, pathological features, and treatment of gastrointestinal nhl are different from other extranodal lymphomas [1]. Obstruction, haemorrhage, and perforation are rare and the complications of lymphoma require life-threatening emergency operations. Diffuse large b-cell lymphoma is the most common pathological subtype of pgi nhl. Diagnosis of pgi nhl might be missed due to its unspecific clinical manifestation. Differential diagnosis of pgi nhl from other types of gi tumors may not be possible in urgent surgeries [3].

The present retrospective study summarized the outcome of 15 patients who underwent emergency surgical intervention for gastro-intestinal perforation or obstruction due to gastrointestinal nhl and were diagnosed with gastrointestinal nhl after the surgery.

2. MATERIALS AND METHODS

Patients who underwent surgical intervention due to gastrointestinal system bleeding, radiological evidence of perforation or intestinal obstruction and were subsequently diagnosed with gastrointestinal lymphoma at department of general surgery, kocatepe university during august 2007 to september 2016 were examined retrospectively. Their medical records, clinical histories, symptoms, demographic data, pathological reports and treatment modalities were also analysed. Radical surgery is defined as completely primary mass resection and regional lymph nodes dissection. Resection materials in the archive were fixed in 10% formol. Hematoxylin-eosin(he) stained preparations obtained by paraffin embedding and immunohistochemical examination preparations were evaluated. Immunohistochemical staining was performed on a leica-bond device. Immunohistochemical studies are lca, cd3, cd4, cd8, cd20, cd79a, cd10, bcl-2, bcl-6, cd5, cyclin d1, cd138, and ki-67. According to immunoprofile and histomorphology, lymphoma subtype was also performed.

3. RESULTS

During initial diagnosis of lymphoma, the patients' age of 40-90 years (mean age of 69.73 years) was considered. There was an occurrence of 15 patients belonging to 7 females and 8 males. The patients presented with complaints of abdominal pain, distention nausea, vomiting, loss of appetite and weight. The clinical manifestations were nausea and/or vomiting in 7 patients (46.6%); loss of appetite in 8 patients (53.3%); abdominal pain in 11 patients (73.3%); and weight loss in 10 patients (66.6%). Tumor locations were in stomach for 7 patients (46.7%) (kardia:3, antrum:3, corpus:1); in jejunum for 1 (6.6%); in ileum for 4 (26.7%); in right colon for 2 (13.3%); and in multiple organ involvement for 1 patient (6.6%). Contrast-enhanced computed tomography (ct) of abdomen was performed on all patients for intestinal obstruction due to intra abdominal and/or intestinal mass. While 8 patients (53.3%) have the only ileus, 8 patients (53.3%) had free fluid in their pelvis and pneumoperitoneum within the peritoneal cavity, which was compatible with perforation. We also reported invagination in the ct scan of 1 patient

(6.6%) (Table 1). All obstructions and perforations were the initial presentations of the intestinal lymphoma. There was no history of lymphoma in any of the patient's radical surgical treatment performed for all patients. The lymphoma observed in small bowel resection material obstructed, ulceration and infiltrated the entire wall of the intestine (Fig. 1). Microscopic findings are depicted in Figs. 2a - 2b - 2c. Distributions of lymphomas were listed according to the he analyses and immunophenotyping (Table 2).

Table 1. Clinical characteristics of the patients variables Total (N=15)

Age (years)	69.7 (40-90)
Gender	
Male	8(53.3%)
Female	7 (46.7%)
Symptoms	
Nausea and/or vomiting	7 (46.7%)
Loss of appetite	8 (53.3%)
Abdominal pain	11 (73.3%)
Weight loss	10 (66.6%)
Bleeding	2 (13.3%)
Computed tomography	
Ileus	8 (53.3%)
Intestinal mass	7 (46.7%)
Intra abdominal multiple Lymph nodes	15 (100%)
Perforation	8 (53.3%)
Invagination	1 (6.7%)
Site of disease	
Stomach	
Cardiya	3 (20%)
Corpus	1 (6.7%)
Antrum	3 (20%)
Jejunum	1 (6.7%)
Ileum	4 (26.7%)
Colon	2 (13.3%)
Multi organ	1 (6.7%)

The mean follow-up period of the patients was 68 months (24-108 months). Only one patient (6.6%) died in the postoperative period. The patient developed a pulmonary embolus on the 8th postoperative day. As a result, the patient expired due to respiratory arrest. All patients received chemotherapy or radiotherapy in the post-operative period.

4. DISCUSSION

Pgi nhl represents nearly 5-10% of all gastrointestinal malignancies [4,5]. Nhl is the fifth most common cancer in the united kingdom (12,294 new cases during 2009), and the gastrointestinal (gi) tract is the most common site of extra nodal presentation (4–12% of all nhl). However, this represents relatively small numbers (0.8– 1.2 cases per 100,000 persons per year). Nhl accounts for up to 10% of gastric malignancies, 18–24% of small bowel cancers and 0.2–0.4% of large bowel malignancies [6].

Table 2. Operation types and pathologic results

Tumor size (cm)	**8.6**
Histological subtype	
diffuse large b cell lymphoma	13(86.6%)
mucosa-associated lymphoid tissue lymphoma	1 (6.6%)
t cell lymphoma	1 (6.6%)
Clinical stage	
i	2 (13.3%)
ii	5 (33.4%)
iii	6 (40%)
iv	2 (13.3%)
Chemotherapy after surgery	15 (100%)
Death	1 (6.6%)

In this study, patients who referred to our emergency clinic for 9 years and operated after their examinations were retrospectively investigated. Mean age during the onset of pgi nhl was 45-70 years [1]. In the present study, the mean age of the patients with pgi nhl was 69.7 years. The incidence of pgi nhl was approximately equal in women and men (male:female ratio=8:7), which was not consistent with previous studies [7, 8, 9]. This is likely due to the small number of patients (n=15) included in this study.

Stomach is the predominant site of pgi nhl followed by the small intestine and colon [10]. The results of this study (stomach lymphoma is 46.6%, small intestinal bowel is 33.3%, and colon is 13.3%) are also supported by previous findings. Furthermore, although the main clinical presentations of pgi nhl include non-specific gastrointestinal symptoms, others such as emergency patients, abdominal pain, distention, nausea, vomiting and constipation are seen as more common. Liang et al. Reported that the three most common symptoms at onset of 425 pgil cases were abdominal pain, gastrointestinal bleeding, nausea and vomiting [5]. In addition, radić-kristo et al. Endorsed that the majority of cases of pgi nhl were presented with epigastric

pain (85%) and dyspepsia (30%) [8]. Primary small bowel nhl has a wide range of clinical presentations, including non-specific abdominal pain, ileus, weight loss, and perforation [11,12]. Clinical manifestations in our patients were nausea and/or vomiting in 5 patients (33.3%); loss of appetite in 3 patients (20%); abdominal pain in 14 patients (93.3%); and weight loss in 2 patients (13.3%). The ratios were similar to those reported in the previous studies [11,12].

As reported in earlier studies, free intestinal perforation due to nhl may occur spontaneously or after chemotherapy [13,14]. The initial presentation in our study was the obstruction due to mass that caused ileus in 13 patients (86.6%), and perforation in 4 patients (26.7%). Pgi nhl was frequently encountered as a single lesion with the size range 3-20 cm (mean of 8.6 cm). Approximately 60–80% of primary intestinal nhls were b-cell derived [15,16]. In this study, b-cell nhl was accounted for 93.3%, of which 86.6% were diffuse large b-cell lymphoma, 6.6% were mantle cell lymphoma and 6.6% were t-cell nhl. Several studies reported that the most common involvement in primary intestinal lymphoma was in the ileum [17]. In this study, ileum was the more common primary tumor site in compared to jejunum with the proportion of 80% and 20%, respectively. Patients with primary intestinal nhl received surgery with postoperative chemotherapy and/or radiotherapy [18,19].

Fig. 1. The lymphoma infiltrating the entire wall of the intestine and obstructive mass

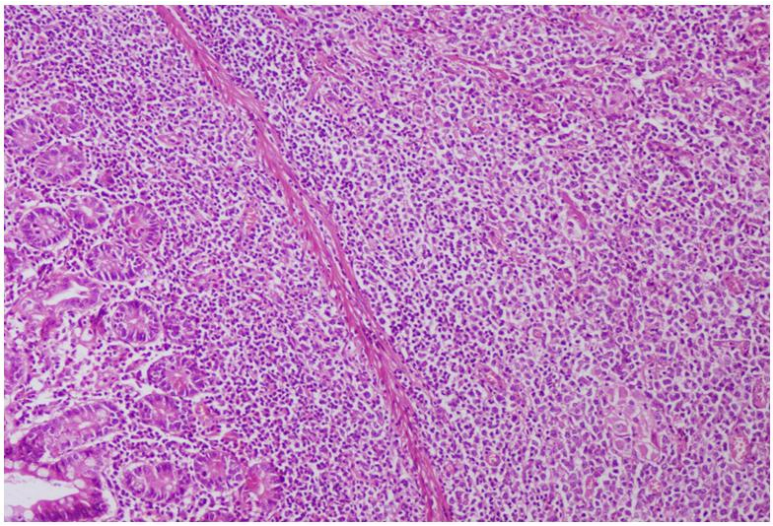

Fig. 2a. A typical lymphocytes infiltrating the colon mucosa and submucosa (x100 he)

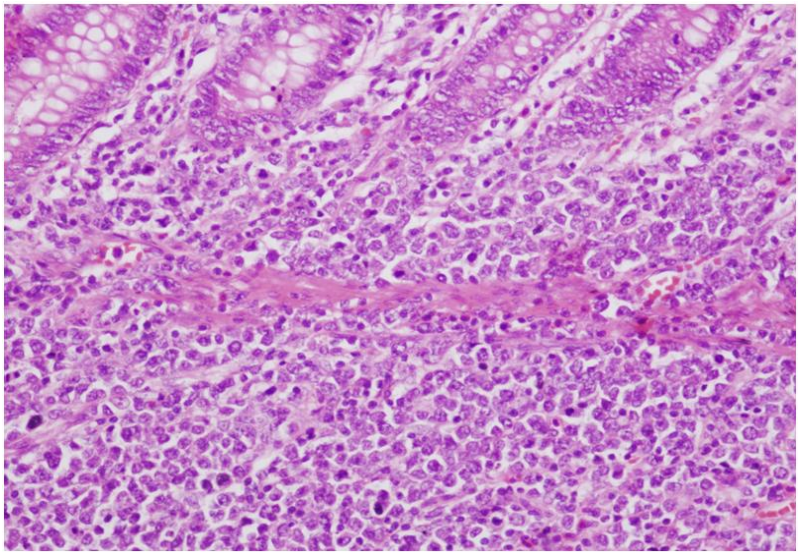

Fig. 2b. Large, nucleus specific, mitotic rich nucleus, narrow eosinophilic cytoplasmic infiltrating lymphocytes located in the mucosa and submucosa (x200 he)

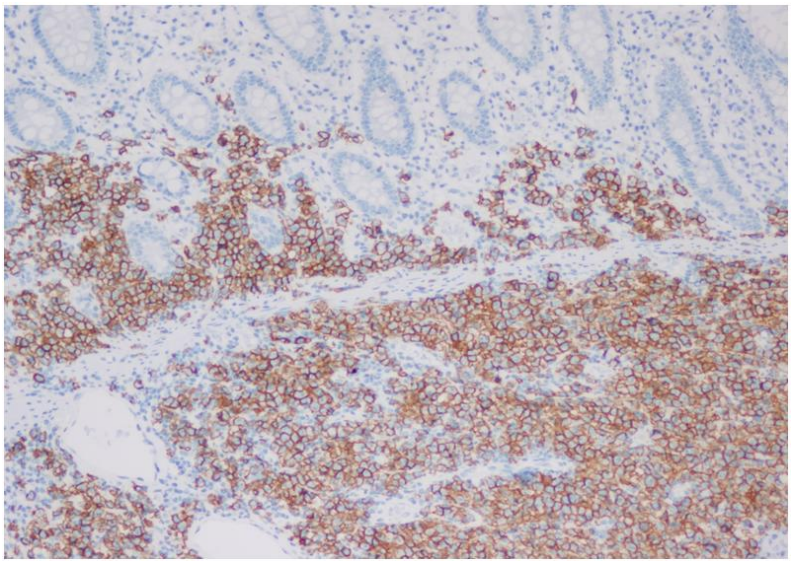

Fig. 2c. Strong cytoplasmic reaction with a typical lymphocytic infiltration obtained by cd20 immunohistochemical study (x100)

5. CONCLUSION

Primary gastrointestinal non-hodgkin lymphoma is often detected as a result of some general symptoms after examinations. Its first treatment is usually chemo radiotherapy. However, the initial presentation of primary gastrointestinal non-hodgkin lymphoma can be occurred as obstruction, bleeding or perforation that may require emergency surgery. Clinicians and surgeons should keep this in mind while assessing patient with mechanic bowel obstruction.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

This study was approved by the institutional review board of kocatepe university and supported by the research fund of kocatepe university (ku 29/2018).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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