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Case Report

Gastric Diffuse Large B-Cell Lymphoma in an Adolescent: A Case Report

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Non-Hodgkin lymphoma · Diffuse large B-cell lymphoma · Gastric lymphoma · Pediatric cancer · Case report

Abstract
Non-Hodgkin lymphoma (NHL) is the 11th most common cancer worldwide and the 4th most common pediatric cancer. The GI tract is the most common extranodal site of NHL, making up about 30–40% of extranodal cases. The median age at diagnosis for gastrointestinal NHL (gNHL) is around 61. On the other hand, gNHL is very rare in the pediatric population. Herein, we report the case of a 15-year-old girl who complained of abdominal pain and vomiting after meals, with severe B symptoms (fever, night chills, and severe weight loss). Esophagogastroduodenoscopy showed a mass in the lesser curvature of the stomach. Subsequent biopsy and immunostaining of the sample confirmed the diagnosis of diffuse large B-cell lymphoma. CT and PET-CT scans indicated the involvement of mesenteric and lesser omental lymph nodes. Later on, the patient started an R-CHOP chemotherapy regimen. In this report, we aim to shine the light on such a rare disease in this age group.

Introduction

Non-Hodgkin lymphoma (NHL) is the 11th most common cancer worldwide and the 4th most common pediatric cancer [1, 2]. NHL could affect the lymph nodes or exist as an extranodal disease mainly involving the GI tract followed by the head and neck region (especially the tonsils) [3].

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Primary gastrointestinal NHL (gNHL) makes up about 30–40% of extranodal NHL cases and 10–15% of all NHL cases [4]. The etiology of gNHL is yet to be accurately defined, as it has been linked with numerous associated factors ranging from celiac disease, *Helicobacter pylori* infection, immunosuppression, and inflammatory bowel disease, to viral infections such as HIV infection, Epstein-Barr virus, and HCV [5]. gNHL mostly affects the stomach ahead of the small intestines and the ileocecal region [6].

The most common histological subtypes of gNHL are diffuse large B-cell lymphoma (DLBCL) and lymphoma of mucosa-associated lymphoid tissue [7]. DLBCL usually presents as single or multiple ulcerative lesions in the stomach, especially in the gastric body or fundus [8]. Therefore, it manifests clinically with a spectrum of gastric and general symptoms such as epigastric pain (the most recurring), loss of appetite, dyspepsia, weight loss, night sweats, gastrointestinal bleeding, and even perforation [6].

gNHL is usually diagnosed in elderly patients with a median age of around 61, and it is rarely seen in younger people (especially under 18) [6]. Herein, we report the case of gastric DLBCL in a 15-year-old girl to raise awareness of the disease in this age group. The CARE Checklist has been completed by the authors for this case report, attached as online supplementary material (for all online suppl. material, see www.karger.com/doi/10.1159/000529181).

Case Report

A 15-year-old girl presented to the clinic complaining of vomiting episodes and abdominal pain following meals. Later on, the abdominal pain became persistent. As a result, the patient lost her appetite and had severe weight loss (10–15 kg in the last 6 months). The patient also experienced severe night sweating and fever episodes. Her medical history was significant for long-standing anemia with no abnormality in hemoglobin electrophoresis. Hemoglobin levels reached 8 g/dL. The patient received five iron injections. Therefore, hemoglobin levels went up to a maximum of 9.5 g/dL. She also mentioned a history of breast cancer in her paternal aunt. Otherwise, the patient's history was insignificant. A physical exam revealed abdominal tension with no specific findings.

Esophagogastroduodenoscopy showed a 1–2-cm ulcerating, budding mass in the lesser curvature of the stomach, extending from the antrum into cardia (shown in Fig. 1). Subsequent biopsy and immunostaining of the sample indicated LCA/CD20/BCl-2-positive, CD3-negative malignant cells with Ki67 = 70%, compatible with DLBCL. CT scan of the chest, abdomen, and pelvis revealed the presence of mildly enlarged mesenteric and lesser omental lymph nodes, the biggest one measuring 2.3 cm in diameter. In addition, irregular thickening of the stomach was found, especially in the antrum and the posterior wall (shown in Fig. 2). PET-CT scan showed pathological uptake of FDG in the previous areas of about SUV = 21 for the stomach wall and SUV = 10.7 for the lymph nodes (shown in Fig. 3). The patient was considered to have stage III disease. Moreover, thickening of the ileocecal junction wall, with SUV = 5.7 uptake, was found on PET-CT scan. However, colonoscopy and biopsy attributed these findings to an inflammatory process at the junction. After a good echocardiography result, the patient was planned on a rituximab, cyclophosphamide, hydroxydaunorubicin, oncovin (vincristine), and prednisone treatment regimen.

Discussion

NHL is ranked 11th among the most common cancers in adults, with 544,352 new cases in 2020 [1]. It is the 4th most common cancer in pediatric patients, with an annual incidence

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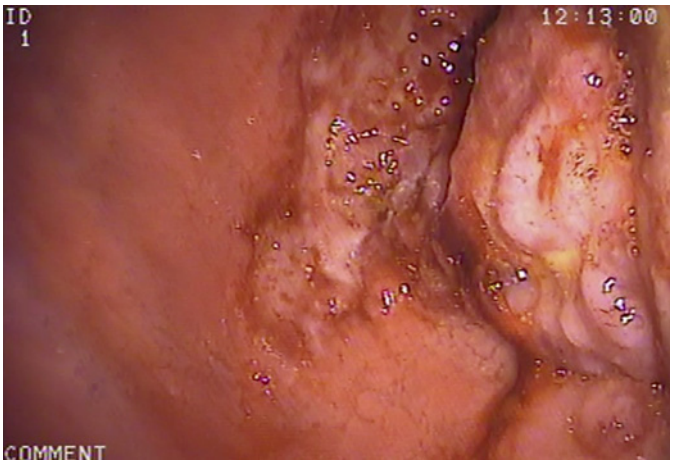

Fig. 1. Esophagogastroduodenoscopy (EGD) showing the mass in the lesser curvature of the stomach.

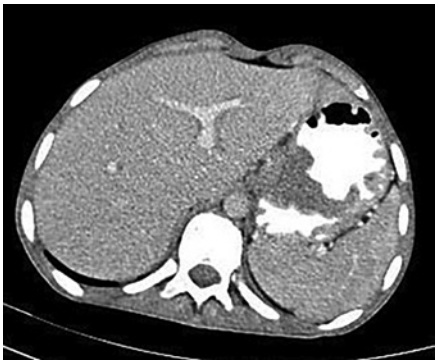

Fig. 2. CT scan of the abdomen revealing irregular thickening of the stomach wall.

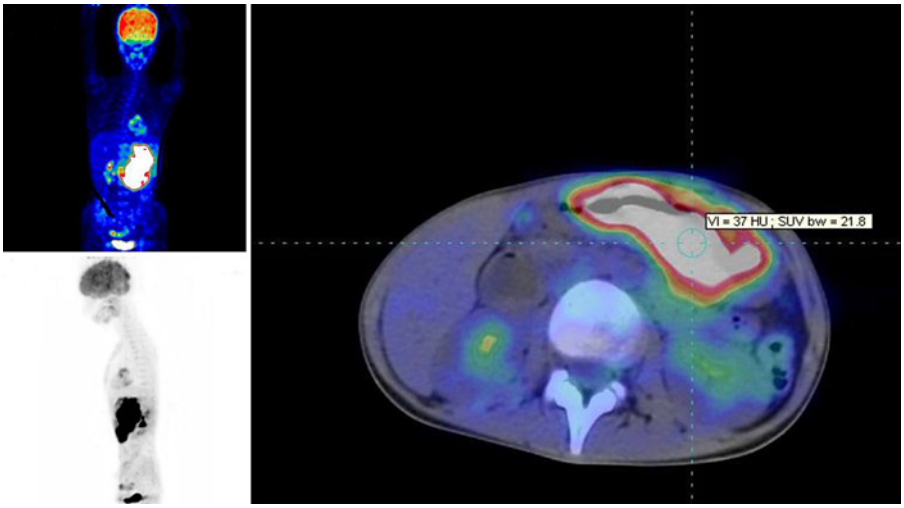

Fig. 3. PET-CT scan showing pathological uptake of FDG in the stomach wall and lymph nodes.

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per million ranging from 5.9 in children aged less than 5 years to about 10 in children between 5 and 14 years and 15 in adolescents [2, 9].

NHL is far more common in males over the age of 67, while on the contrary, it is rare in children [10]. Pediatric NHL is famous for frequent extranodal involvement. Thus, it highly differs in clinical features from NHL observed in adults. As a result, a different staging system – St Jude staging classification – is adopted instead of the Ann Arbor classification. St Jude staging classification assigns stage III to patients with mediastinal and extensive abdominal lesions and limits stage IV assignment to the involvement of bone marrow and CNS regardless of other sites [11].

The GI tract is the most commonly involved extranodal site in all age groups [3]. However, gNHL in adults mostly affects the stomach ahead of the small intestines and the ileocecal region, where the most frequent histological types are DLBCL and mucosa-associated lymphoid tissue [6–8]. On the other hand, the majority of pediatric gNHL are found in the small bowel, followed by the large bowel and the stomach in the histological types of Burkitt lymphoma (51.8%) and DLBCL (26.1%) [12].

The clinical manifestations of pediatric gNHL resemble those reported in adults and consist mainly of abdominal pain (81.4%) with other constitutional and gastrointestinal symptoms such as vomiting, diarrhea or constipation, and intestinal obstruction [13]. Tumor location is one of the most important prognostic factors in children, as intestinal tumors are associated with a 10-year survival of more than 80%, whereas tumors of the stomach exhibit a significant decrease in 10-year survival (60%) [14].

The essential treatment for gNHL is chemotherapy, which depends mainly on the histological subtype [14]. For DLBCL, both rituximab, cyclophosphamide, hydroxydaunorubicin, oncovin (vincristine), and prednisone and BL regimens have favorable outcomes with a slight advantage to the latter in the pediatric population [15]. The role of surgery and radiotherapy in treating gNHL is still controversial due to contradictory results [12].

Conclusion

Gastric DLBCL is a very uncommon entity in children. It usually behaves aggressively and requires proper treatment promptly. This report aimed to highlight this rare, very aggressive, and lethal (if untreated) disease in this age group.

Statement of Ethics

Ethical approval is not required for this study in accordance with local or national guidelines. A written informed consent was obtained from the parent or legal guardian of the patient for publication of the details of their medical case and any accompanying images.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Fouad Nahhat participated in literature review, introduction, discussion, and conclusion. Kareem Zabad participated in introduction and discussion. Hasan Najjar participated in case presentation and abstract. Moday Doyya participated in literature review and case presentation. Nisreen Khazeam participated in the patient's care and supervised the manuscript preparation, scientifically and academically.

Data Availability Statement

All data are included in this article and its online supplementary material. Further inquiries can be directed to the corresponding author.

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