Case Report

Primary Appendiceal Lymphoma Presenting as Perforated Appendicitis: A Case Report

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Abstract

Primary appendiceal lymphoma is very rare, representing about 0.015% of gastrointestinal lymphomas. It is difficult to diagnose clinically, as most cases present with symptoms resembling acute appendicitis.

Here, we present a case of appendiceal lymphoma that presented with acute perforation, diagnosed through imaging as free air foci in the abdominal cavity. The patient was operated on, and the tissue was sent for histopathology, where a diagnosis of primary appendiceal lymphoma was made. A Fluoro-deoxyglucose Positron Emission Tomography (FDG-PET) scan was performed post-operatively, which showed extensive involvement of the abdominal cavity.

Management is similar to that of primary gastrointestinal lymphoma, using a multimodal approach that includes surgery, chemotherapy, and radiotherapy. Due to her poor general condition, the patient could not tolerate the usual R-CHOP treatment, which includes cyclophosphamide, doxorubicin HCl, vincristine, and rituximab. Hence, she was started on mini-CHOP, which entails a reduced dosage of doxorubicin.

Keywords:

Primary appendiceal lymphoma, perforation, appendix, diffuse large B-cell lymphoma.

Introduction

The gastrointestinal tract is involved in different types of malignancies, of which adenocarcinoma is the most common. Lymphomas constitute about 1-4% of all gastrointestinal malignancies. It is the most common site for extranodal non-Hodgkin lymphoma. Primary appendiceal lymphoma is very rare, constituting about 0.015% of all gastrointestinal lymphomas. Primary appendiceal lymphoma is a rare entity known to present masquerading as acute appendicitis. Imaging studies may not be specific enough to differentiate between the two. The treatment usually followed is similar to that used for primary gastrointestinal tract lymphoma, that is, R-CHOP. Here, we present a case of primary appendiceal diffuse large cell lymphoma presenting with appendiceal perforation.

Case Report

A 65-year-old lady, who was diagnosed with chronic kidney disease in 2018, presented with complaints of acute abdomen and was admitted for further work-up. A computed tomography (CT) scan of the abdomen was performed, which showed mild ascites and free air foci in the abdominal cavity. She underwent laparotomy for a perforated appendix, and the tissue was sent for histopathological examination.

The patient had previously been admitted in 2022 with severe anemia, nausea, vomiting, and weight loss. Investigations revealed hypergammaglobulinemia, leading to a clinical suspicion of plasma cell dyscrasias. A bone marrow work-up and a positron emission tomography (PET-CT) scan were performed. Reports showed reactive marrow with no increase in plasma cells in the aspiration and reactive marrow with erythroid hyperplasia in the bone marrow biopsy. PET-CT did not show any malignancy. The myeloma protein panel showed polyclonality. The antinuclear antibody (ANA) panel showed an antibody to Ro-52 (3+).

Gross pathological examination showed a focally gangrenous perforated appendix, with a diameter of 1.2 cm, tan-colored walls, distorted architecture, and no lumen identifiable in the distal part. Histopathology showed partial destruction of the normal architecture of the appendix by diffuse infiltration of the appendiceal wall by medium to large-sized lymphoid cells. Immunohistochemistry was performed to determine the type of lymphoma. CD20, which determines B lymphoid cell lineage, and CD10 and bcl6, which determine a germinal center phenotype, were positive. Ki67%, which determines the proliferative index, was 60%. CD3 was positive in scattered cells; bcl2, CD5, CD23, MUM1, and cMyc were negative [Figure 1 and Figure 2].

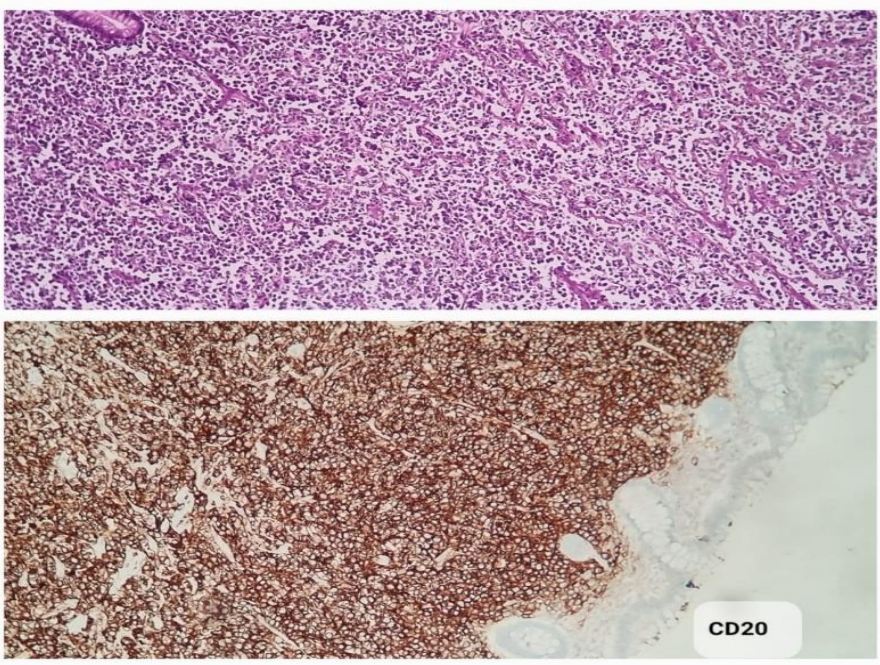

Figure 1: H&E stain of appendiceal wall showing diffuse infiltration lymphoma cells,50x; CD 20 highlighting those cells.100x

A diagnosis of diffuse large B-cell lymphoma, germinal center B phenotype, was made. Postoperative PET-CT showed involvement of the liver, gastro-splenic, lieno-renal ligament peritoneal, and right iliac fossa deposits. Due to her poor general condition, she was treated with the R-Mini CHOP regimen and is presently admitted to the intensive care unit.

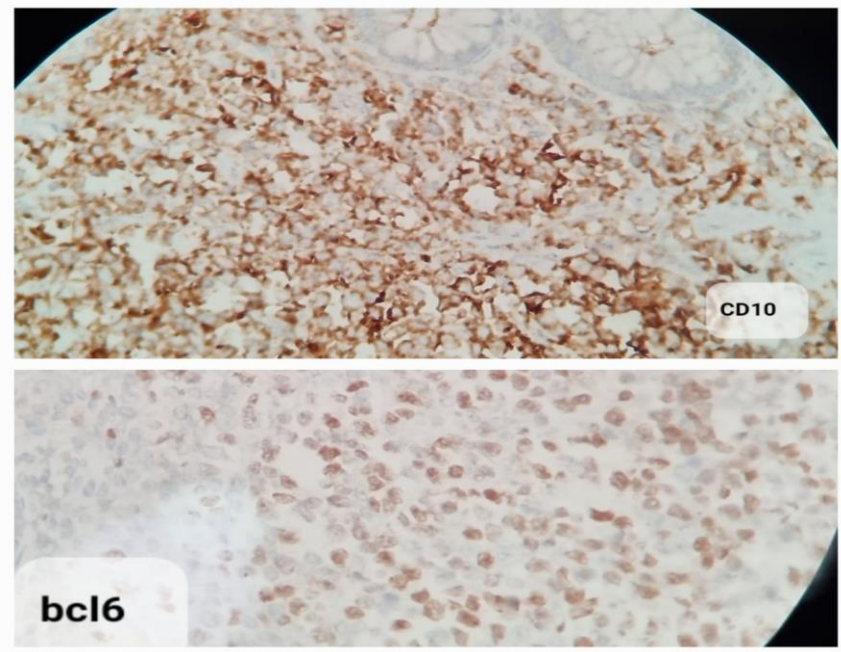

Figure 2: CD10 and bcl6 positive in the lymphoma cells, 400x

Discussion

Primary appendiceal lymphoma is a very rare entity, accounting for 0.015% of all gastrointestinal lymphomas [1,2,3,4]. Some studies have shown a higher incidence of 1–4% [5]. These lymphomas present with symptoms of acute appendicitis, perforated appendix, palpable mass, intussusception, gastrointestinal bleeding, urethral obstruction, or incidental imaging findings [1,2,3,4,5]. Imaging findings are not specific. An enlarged appendix raises suspicion of malignancy, especially if the diameter is more than 1.5 cm and associated with appendiceal fat stranding [1,2,3,5]. A diameter of 3 cm or larger and maintained vermiform architecture is considered highly suspicious of lymphoma [5]. A thickened wall or diffuse enlargement of the appendix may be mistaken for a thickened bowel loop, which could interfere with the diagnosis [1,5]. Positron emission tomography (PET-CT) is thought to be more valuable for diagnosis [1]. The median age at diagnosis was found to be 55 years in some studies, while another study found it to be about 48 years [2,6].

The most common diagnosis of primary gastrointestinal lymphoma is non-Hodgkin's lymphoma, with Hodgkin's lymphoma being rare [6]. Diffuse Large B-cell Lymphoma (DLBCL) is the most common subtype, with scattered incidences of marginal zone lymphoma, follicular lymphoma, mantle cell lymphoma, and Burkitt's lymphoma [4,5,6,7,8]. Most cases of primary gastrointestinal non-Hodgkin lymphomas are treated with a combination of chemotherapy, radiotherapy, surgery, and immunotherapy. Chemotherapy includes six cycles of R-CHOP every 21 days [10,11]. The treatment of primary appendiceal lymphoma is similar to that of primary gastrointestinal lymphoma, consisting of primary surgery followed by chemotherapy and immunotherapy, specifically R-CHOP.

One study found that the outcome following chemotherapy was much better than surgery alone or surgery combined with chemotherapy [9]. In another study, no statistically significant survival difference was observed between gender, race, and histologic subtypes. Right hemicolectomy conferred no survival benefit over appendectomy and/or partial colectomy ($P = 0.501$). In multivariate analysis, increasing age at diagnosis ($P < 0.001$) was associated with increased hazards of death, while gender,

race, tumor histology, disease stage, and nature of resection were not significantly associated with overall survival [5].

A PET-CT is considered the cornerstone of the staging procedure in the management of lymphomas. In our patient, the PET-CT performed in 2022 did not show any malignancy. We hypothesize that this could mean either there was no malignancy initially, or the PET-CT did not detect the lesion. It is known that PET-CT can miss low-grade non-Hodgkin's lymphomas, such as marginal zone lymphomas, small lymphocytic lymphomas, primary follicular lymphomas, and peripheral T-cell lymphomas [12]. Hence, it is hypothetically possible that an indolent low-grade lymphoma could be missed and may transform into a high-grade lymphoma with undesirable consequences.

Many case reports have shown favorable outcomes for patients with post-treatment disease-free survival. However, our patient's condition deteriorated, necessitating transfer to the intensive care unit. One reason could be her multiple comorbidities and poor general health.

Conclusion

Primary appendiceal lymphoma is very rare, and not many studies are available in the literature. Clinical features are mostly non-specific and are not indicative of lymphoma. Imaging, especially computed tomography, is considered a useful tool, where a diameter of 3 cm or more and vermiform morphology have been thought to indicate a lymphomatous process [5]. In our case, the diameter of the appendix was much smaller. Therefore, a smaller diameter cannot fully exclude appendiceal lymphoma. PET-CT is an important investigation for diagnosing and staging, but sometimes, low-grade lymphomas may be missed. In conclusion, more studies are needed to fully appreciate this entity and develop diagnostic and management policies.

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