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(CASE REPORT)

Peritoneal lymphomatosis: An unusual cause of ascites, Case report

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Abstract

Diffuse large B-cell lymphoma (DLBCL) is a highly relevant hematological neoplasm with frequent extranodal involvement of the gastrointestinal tract. We present a case report of an atypical DLBCL, addressing its diagnosis and clinical management to highlight the importance of early suspicion in unusual presentations.

Keywords: B-cell lymphoma; Peritoneal lymphomatosis; ascites; PET-SCAN

1. Introduction

Non-Hodgkin lymphoma (NHL) is a heterogeneous group of hematologic malignancies comprising more than 90 distinct genotypes. Approximately 90% of NHL cases originate from the B-cell lineage, with the diffuse large B-cell lymphoma (DLBCL)the predominant histological subtype globally (1). Clinically, these neoplasms can manifest in a nodal or extranodal form; the latter presentation occurs in 35-40% of patients, primarily affecting the gastrointestinal tract (2). Within this system, the stomach is the most frequently involved organ, followed by the small intestine and the ileocecal region (3).

A clinical sign of poor prognosis in these pathologies is the appearance of malignant ascites which confirms the presence of neoplastic cells in the peritoneal cavity (4). An extremely rare and poorly documented variant is the linfomatosis peritoneal related to DLBCL, defined as diffuse peritoneal dissemination of lymphoma (5). Because its clinical presentation is nonspecific, it often mimics peritoneal carcinomatosis secondary to adenocarcinomas, leading to underdiagnosis and poor representation in the medical literature (6,7).

Given the low prevalence of peritoneal lymphomatosis as the initial presentation of NHL, we present the case report of a patient in the seventh decade of life with a confirmed diagnosis of this entity, with the aim of alerting the scientific community about this diagnostic and therapeutic challenge.

2. Clinical case

This is a 66-year-old female patient with a history of type 2 diabetes mellitus managed for more than 10 years, hypertension, and venous insufficiency, treated with insulin therapy, antihypertensives, and flavonoids. She consulted at a level 4 complexity clinic in the city of Barranquilla for a 1-month history of abdominal distension, edema in the lower extremities, and fatigue. An external abdominal ultrasound was performed, which reported moderate ascites. Upon admission, she presented with vital signs of grade II hypertension, afebrile, without jugular venous distension or lymphadenopathy, a distended abdomen with a positive grade II ascites wave, and grade II edema in the lower

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extremities. Initial paraclinical tests showed leukocytosis with lymphocytes (visualized in *Cella vision* lymphocytes with large atypical nuclei (see figure 1), platelets within normal limits and grade I anemia, was taken to paracentesis with cytochemical report of exudate type with GASA index of 1.4 which gives a direction towards possible portal hypertension - chronic liver disease of metabolic origin with risk by FIB-4 calculated 4.5, however in abdominal ultrasound no data of significant chronic liver disease were found without retroperitoneal masses, nor lymphadenopathy, portal Doppler was also performed which did not have data of hypertension.

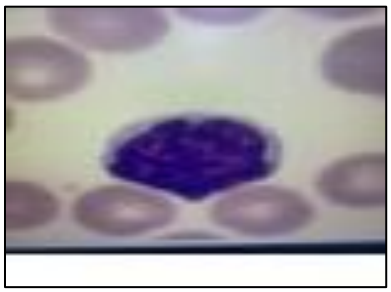

Figure 1 Peripheral blood sample by *Cella Vision.* Binucleated atypical lymphocytes with increased chromatin density and an increased nucleus/cytoplasm ratio >80%

It is noteworthy that the cytology of the paracentesis was found pleocitosis con large lymphocytes, with a low nucleus-to-cytoplasm ratio, irregular nucleus with indentation, evident nucleolus, and condensed chromatin (Figure 2). A PET scan was ordered, and due to the presence of atypical lymphocytes, a hematology consultation was requested (Figure 3). Subsequently, considering the patient's presence of a retroperitoneal mass, a general surgery consultation was requested for an abdominal lymph node biopsy, along with a bone marrow biopsy and aspiration. The bone marrow biopsy suggested a possible diagnosis of follicular lymphoma versus large B-cell lymphoma, so a lymph node biopsy was performed. Immunohistochemical analysis revealed CD20+, CD10+, and CD19+, consistent with stage IV advanced large B-cell lymphoma. The patient was referred by the hematology department for the first cycle of chemotherapy with R-CHOP.

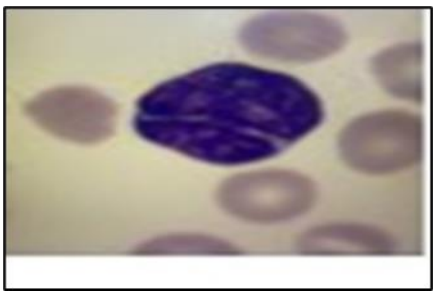

Figure 2 Peritoneal fluid sample. Atypical lymphocytes with increased nuclear size and crenated erythrocytes are visualized

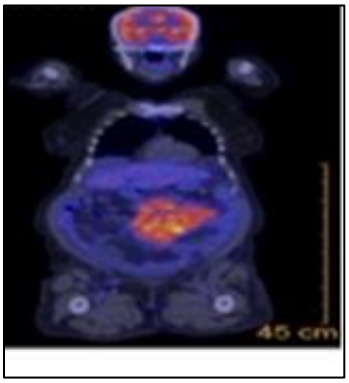

Figure 3 PET SCAN. A large space-occupying lesion is visualized, with soft tissue density and hypermetabolic activity, extensively involving the abdominal and pelvic mesentery

3. Discussion

Peritoneal lymphomatosis (PL) represents an uncommon extranodal manifestation of lymphomas, especially non-Hodgkin lymphoma, which is the most prevalent hematological neoplasm in Colombia (1). Historically, the first description of this entity dates back to 1986, where only three cases were identified within a cohort of 149 patients with ascites, which underscores its low incidence (2).

Clinically, peritoneal lymphoma (PL) has an insidious course with nonspecific gastrointestinal symptoms such as abdominal pain, distension, and weight loss. In the case analyzed, the initial presentation with ascites is particularly noteworthy due to its low frequency as an initial presentation in lymphomas (3). Pathophysiology, it is postulated that peritoneal lymphomatous infiltration alters the permeability of local vessels, facilitating the extravasation of fluid into the peritoneal cavity (3).

The peritoneal surface can be affected by three cell lineages: epithelial (carcinomatosis), mesenchymal (sarcomatosis), and lymphoid (lymphomatosis) (4). In the context of malignant lymphoma, there are two routes of invasion: primary effusion lymphoma (PEL), characterized by neoplastic effusions in body cavities without evidence of a solid tumor; and peritoneal invasion secondary to lesions in the digestive tract or abdominal lymphadenopathy (5). Although the routes of dissemination are not entirely clear, the involvement of structures such as the gastrocolic ligament, the transverse mesocolon, and the visceral peritoneum has been suggested (4). The omentum, given its limited lymphoid tissue reserve, is usually spared, although there are isolated reports of its invasion (3,5,6).

Early identification of peritoneal carcinomatosis (PC) is crucial, given that its treatment regimen differs radically from other peritoneal neoplasms and its prognosis tends to be more favorable with timely treatment, with reported survival rates of up to five years (5). However, PC presents a diagnostic challenge by mimicking carcinomatosis, sarcomatosis, or ascites due to portal hypertension. In this regard, analysis of ascitic fluid and tomographic imaging are fundamental, although the gold standard remains histopathological examination and immunohistochemistry (3).

Regarding the study of ascitic fluid, the finding of a high protein concentration can guide the diagnosis (7). In this case, a serum-ascites albumin gradient (SAAG) of 1.4 g/dL was paradoxical, suggestive of portal hypertension, despite the absence of clinical or imaging signs of liver disease; this phenomenon has already been documented in cases of lymphoproliferative disorders that act as "mimickers" of portal hypertensive ascites (3). Additionally, although the elevation of lactate dehydrogenase (LDH) is usually proportional to the tumor burden in lymphoproliferative processes, no significant increases were observed in this instance. However, the presence of leukocytosis with lymphocyte predominance and the finding in peripheral blood of lymphocytes with cleaved nuclei and scant cytoplasm allowed this neoplastic process to be differentiated from infectious or autoimmune etiologies (8).

The elevation of the CA-125 antigen observed in this case is pathophysiology attributed to shear forces on mesothelial cells, a common finding in cases of ascites or pleural effusion without primary ovarian pathology (3). Regarding the imaging, the retrospective analysis by O'Neil et al. (2014) highlights that, although pleural effusion (PE) and peritoneal carcinomatosis are similar, PE is characterized by lymphadenopathy, large mesenteric masses, and splenomegaly (9), findings that coincide with the mesenteric conglomerates observed in our patient.

Finally, positron emission tomography (FDG-PET/CT) proved to be a vital tool for staging and biopsy site selection, revealing hypermetabolic activity in the cervical and mesenteric arteries. Despite its high sensitivity (100%) and specificity (97%) for peritoneal dissemination, its limited availability in various healthcare centers remains a diagnostic barrier (7). In conclusion, this case highlights the importance of including peritoneal lymphomatosis in the differential diagnosis of ascites of obscure origin to ensure early therapeutic intervention.

4. Conclusion

Peritoneal lymphomatosis (PL) presents a significant diagnostic challenge due to its low incidence and clinical presentation that mimics more common pathologies, such as peritoneal carcinomatosis or tuberculosis. This case highlights the diagnostic paradox of elevated GAS in the absence of cirrhosis, necessitating a thorough search for non-portal etiologies. The integration of splenomegaly, elevated CA-125, and atypical lymphocytosis in the ascitic fluid was crucial in guiding the investigation toward a lymphoproliferative syndrome. It is emphasized that, unlike other peritoneal neoplasms with a poor prognosis, PL responds favorably to systemic chemotherapy; therefore, its early identification through a multimodal approach (cytology, immunophenotyping, and functional imaging) is critical for long-term survival.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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