A Rare Case of T- cell Lymphoma Found in the Liver

Neethi Dasu[1*] | Kailash Lal[2] | Lucy Joo[2] | Donald McMahon[2]

[*]**Correspondence:** Neethi Dasu

Address: [1]Department of Medicine, Rowan University School of Osteopathic Medicine, Jefferson Health, USA; [2]Department of Gastroenterology, Rowan University School of Osteopathic Medicine, Jefferson Health, USA

e-mail ✉ dasu@rowan.edu

Received: 11 October 2019; **Accepted:** 18 October 2019

ABSTRACT

Peripheral T-cell lymphomas, a group of non-Hodgkin lymphomas, are rare and aggressive neoplasms which usually portend a poor prognosis. In this case report, we present a 65-year-old male patient with rapidly progressing peripheral T-cell lymphoma found in his liver and spleen. He initially presented with elevated liver enzymes with initial tests failing to reveal a clear etiology. A liver biopsy revealed malignant infiltration with a peripheral T-Cell lymphoma. This case is important for practitioners to keep in mind rarer causes of hepatic dysfunction, as swift and careful evaluations to establish accurate diagnoses and initiate treatment is critical to improving outcomes.

Keywords: *T- Cell Lymphoma, Liver Biopsy, Neoplasms*

Introduction

Elevation in liver enzymes can be due to a variety of reasons including toxins, drugs, autoimmune process, sepsis, malignant infiltration, alcoholic hepatitis, and viral hepatitis. In this case study, our patient presented with an obstructive pattern of liver test abnormalities. Workup to exclude other causes of liver injury was performed and eventually a liver biopsy was needed. The biopsy revealed a malignant infiltration of peripheral T-cell lymphoma.

Case Report

A 65-year-old male presented with decreased responsiveness, fever and hypotension. His past medical history included cerebrovascular accident at age 21, cerebral aneurysm, seizure disorder, and malignant tumor of the larynx status post chronic tracheostomy. On physical exam, he appeared diaphoretic and difficult to arouse on initial presentation. His abdomen was soft, non-tender, with

normal bowel sounds. Superficial excoriations were observed on his sacrum. He was found to have severe sepsis with septic shock. His total bilirubin was 2.2, direct bilirubin of 1.5, alkaline phosphatase 630, ALT 41, AST 66, and a GGTP of 616. A CT scan with oral and IV contrast of his chest, abdomen and pelvis demonstrated bibasilar consolidations and patchy nodules involving the left upper lobe and lower lobes, rectum distended with stool and perirectal edema. An abdominal ultrasound revealed the liver was of normal size and echotexture, with no evidence of cholecystitis.

The patient was admitted to the Intensive Care Unit and started on broad spectrum antibiotics for pneumonia and bacteriuria. An acute hepatitis panel was negative and a repeat abdominal ultrasound showed a borderline diffusely thickened gallbladder wall measuring 3.0 mm – an increase from the 1.5 mm measurement found in the prior study. Questionable common bile duct/common hepatic duct measured 5.3 mm.

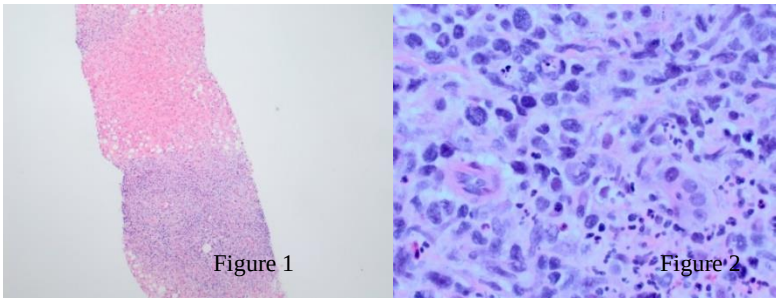
The patient admitted to consuming 1-2 drinks of alcohol per day, but his Maddrey's discriminant function was less than 32. The patient's LFTs continued to trend upward in an obstructive pattern with no obvious etiology. A **MRCP** study was deemed necessary; however, metallic clips in the patient's brain prevented the study from being performed. An ERCP was normal. Hence, it was proposed that the patient's elevated LFTs results were likely secondary to drug-induced liver injury or portal vein thrombosis. However, a review of the patient's medications revealed none that could cause the obstructive pattern of LFTs. A right upper quadrant ultrasound with duplex demonstrated a patent portal vein with normal directional hepatopedal blood flow. The liver was steatotic with mild splenic enlargement noted. The gallbladder wall was mildly thickened and edematous, with trace pericholecystic fluid.

As the patient's LFTs continued to worsen, a liver biopsy was done. Chronic liver serologies showed a positive smooth muscle antibody, positive ANA, nucleolar ANA pattern, and negative IGG. EBV IgG was high. However, he did not meet criteria for Autoimmune Hepatitis.

Eventually, he was found to have MRSA bacteremia and required vasopressor support. A repeat CT scan revealed a hypodense lesion in the inferior right hepatic lobe and splenic enlargement with multiple masses; the overall size of the spleen and the masses increased compared to the initial CT. His bilirubin continued to rise but his AST/ALT levels remained stable. Since he was deemed a poor operative candidate, surgical intervention was not indicated. Eventually, he became diffusely jaundiced and was in hepatic failure. The family elected to have comfort measures initiated and the patient expired the next day.

Discussion

The pathology report of the patient's core biopsy revealed liver showing involvement by a CD30-positive T-cell lymphoma. Hematoxylin- and eosin-stained sections demonstrated periportal involvement by pleomorphic large hyperchromatic cells with prominent nucleoli associated with numerous mitotic figures (Fig. 1 and Fig. 2). Immunohistochemical stains revealed positivity with CD3 and CD30 (Fig. 3 and Fig. 4). This staining pattern is consistent with involvement of a CD30 peripheral T-cell lymphoma, not otherwise specified (PTCL-NOS); however, an ALK-negative anaplastic T-cell lymphoma could not be excluded (Fig. 5).



Figures 1 and 2: Hematoxylin and Eosin stained sections demonstrate periportal involvement by pleomorphic large hyperchromatic cells with prominent nucleoli associated with numerous mitotic figures. Rare uninvolved portal tracts show granulomatous inflammation with evidence of bile duct destruction

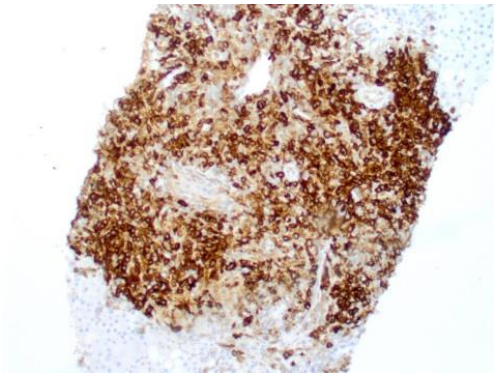


Figure 3: CD30- stain positive

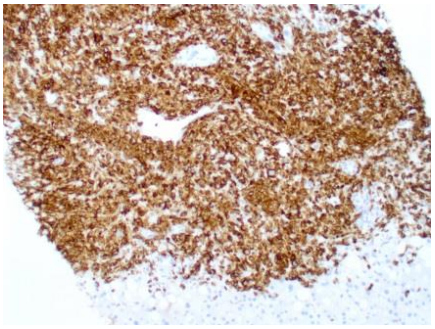


Figure 4: CD3- stain positive

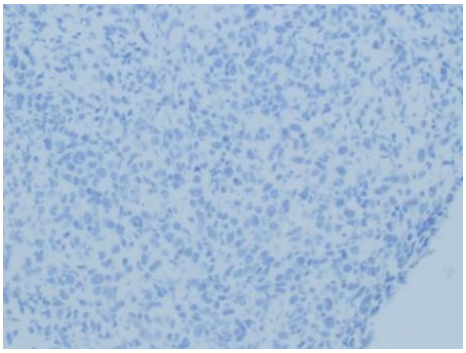


Figure 5: ALK – negative stain

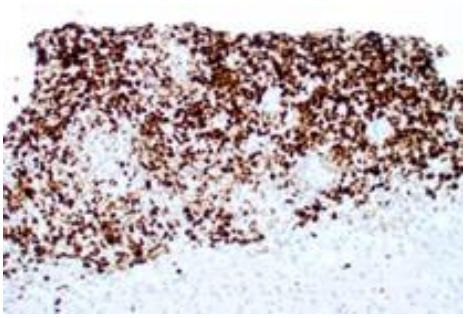


Figure 6: Ki-67- demonstrates a proliferative index on the order of >95% on these cells

Peripheral T-cell lymphomas are a group of aggressive neoplasms which are grouped under non-Hodgkin lymphomas. The most common subtype is PTCL- NOS, (Campo *et al*., 2011; Swerdlow *et al*., 2016). This disease occurs most commonly in males, with a mean age of diagnosis at 60 years. The highest incidence is found among African Americans (Adams *et al*., 2016; Weisenburger *et al*., 2011). Histologically, atypical lymphoid cells contain pleomorphic, irregular, vesicular, or hyperchromatic nuclei with prominent nucleoli and display a very high mitotic rate (Campo *et al*., 2011), which was noted on this patient's liver biopsy findings with a KI-67 stain demonstrating a proliferative index >95% (Fig. 6). The immunophenotype of PTCL-NOS usually demonstrates expression of one or more of the pan-T antigens (i.e. CD2, CD3, CD5, CD7) (Hastrup *et al*., 1989; Pinkus *et al*., 1990), as also seen on the liver biopsy.

Anaplastic T-cell lymphomas are neoplasms of mature T lymphocytes which are categorized into two subtypes: those that express anaplastic lymphoma kinase (ALK) fusion proteins versus those that are ALK negative. These Lymphomas are more common among Caucasians, African Americans, Pacific Islanders, and American Indians and have a bimodal age of incidence (Armitage *et al*., 1998; Medeiros *et al*., 1991; The Non-Hodgkin's Lymphoma Classification Project., 1997; Abramson *et al*., 2014). ALK-negative lymphomas generally portend a poorer overall survival rate (Swerdlow *et al*., 2016; Armitage *et al*., 1998). Anaplastic large cell lymphoma (ALCL) that is ALK-negative is a different entity from

CD30+ PTCL-NOS, but can be difficult to differentiate (Swerdlow *et al*., 2016). One way to distinguish between these disease processes includes evaluation of immunophenotypic features.

Clinical manifestations of T-cell lymphomas include progressive lymphadenopathy, night sweats, weight loss and fevers (Schlegelberger *et al*., 1994; Ong *et al*., 1998; Hartmann *et al*., 2010). 66% of patients present with extranodal involvement (Schlegelberger *et al*., 1994; Ong *et al*., 1998; Hartmann *et al*., 2010). This patient presented with extranodal involvement as evidenced by the splenic lesions and biopsy-proven liver involvement. The patient's initial CT scan did not reveal any lesions on his liver or spleen, which suggests that this process was fast growing.

Treatment options for newly diagnosed T-cell lymphomas include induction combination with cyclophosphamide, doxorubicin, vincristine and prednisone, with addition of Etoposide if younger than 60 years of age. Other treatment modalities include radiation therapy and/or autologous hematopoietic cell transplantation. Survival rates for the majority of T-cell lymphomas are relatively low, with a current 5-year overall survival rate of 10–30% (Zhang *et al*., 2016). A number of novel treatment agents have been introduced in recent years, these therapies hold some promise for improving outcomes in patients with PTCL (Zhang *et al*., 2016).

References

A clinical evaluation of the International Lymphoma Study Group classification of non-Hodgkin's lymphoma. The Non-Hodgkin's Lymphoma Classification Project. *Blood* 1997; 89: 3909.

Abramson JS, Feldman T, Kroll-Desrosiers AR, Muffly LS, Winer E, Flowers CR, Lansigan F, Nabhan C, Nastoupil LJ, Nath R, Goy A. Peripheral T-cell lymphomas in a large US multicenter cohort: prognostication in the modern era including impact of frontline therapy. *Annals of Oncology* 2014; 25: 2211-2217.

Adams SV, Newcomb PA, Shustov AR. Racial Patterns of Peripheral T-Cell Lymphoma Incidence and Survival in the United States. *Journal of Clinical Oncology* 2016; 34: 963-971.

Armitage JO, Weisenburger DD. New approach to classifying non-Hodgkin's lymphomas: clinical features of the major histologic subtypes. Non-Hodgkin's Lymphoma Classification Project. *J Clin Oncol* 1998; 16: 2780.

Campo E, Swerdlow SH, Harris NL, Pileri S, Stein H, Jaffe ES. The 2008 WHO classification of lymphoid neoplasms and beyond: evolving concepts and practical applications. *Blood* 2011; 117: 5019-5032.

Hartmann S, Gesk S, Scholtysik R, Kreuz M, Bug S, Vater I, Döring C, Cogliatti S, Parrens M, Merlio JP, Kwiecinska A. High resolution SNP array genomic profiling of peripheral T cell lymphomas, not otherwise specified, identifies a subgroup with chromosomal aberrations affecting the REL locus. *British journal of haematology* 2010; 148: 402-412.

Hastrup N, Ralfkiaer E, Pallesen G. Aberrant phenotypes in peripheral T cell lymphomas. *Journal of Clinical Pathology* 1989; 42: 398-402.

Medeiros LJ, Lardelli P, Stetler-Stevenson M, Longo DL, Jaffe ES. Genotypic Analysis of Diffuse, Mixed Cell Lymphomas: Comparisons with Morphologic and Immunophenotypic Findings. *American journal of clinical pathology* 1991; 95: 547-555.

Ong ST, Le Beau MM. Chromosomal abnormalities and molecular genetics of non-Hodgkin's lymphoma. *Semin Oncol* 1998; 25: 447.

Pinkus GS, Ohara CJ, Said JW. Peripheral/post-thymic T-cell lymphomas: A spectrum of disease clinical, pathologic, and immunologic features of 78 cases. *Cancer* 1990; 65: 971-998.

Schlegelberger B, Himmler A, Godde E, Grote W, Feller AC, Lennert K. Cytogenetic findings in peripheral T-cell lymphomas as a basis for distinguishing low-grade and high-grade lymphomas. *Blood* 1994; 83: 505-511.

Swerdlow SH, Campo E, Pileri SA, *et al*. The 2016 revision of the World Health Organization classification of lymphoid neoplasms. *Blood* 2016; 127: 2375-2390.

Weisenburger DD, Savage KJ, Harris NL, Gascoyne RD, Jaffe ES, MacLennan KA, Rüdiger T, Pileri S, Nakamura S, Nathwani B, Campo E. Peripheral T-cell lymphoma, not otherwise specified: a report of 340 cases from the International Peripheral T-cell Lymphoma Project. *Blood* 2011; 117: 3402-3408.

Zhang Y, Xu W, Liu H, Li J. Therapeutic options in peripheral T cell lymphoma. *Journal of hematology & oncology* 2016; 9: 37.