

Fibrin-associated diffuse large B cell lymphoma involving kidney: A rare occurrence—Case report and review of the literature

Vijayalakshmi M, Puneet Kaur, Thirumala V,
Singh A, Thirumala S

ABSTRACT

Fibrin-associated diffuse large B cell lymphoma (FA-DLBCL) is an unusual form of lymphoma associated with chronic inflammation. It unlike other large B cell lymphomas does not form mass lesions and is discovered incidentally on histologic examination. Approximately, 40 cases have been described in the English language to date. We present a rare case of FA-DLBCL incidentally discovered in a nephrectomy specimen performed for a large cystic lesion. Fibrin-associated diffuse large B cell lymphoma is an indolent tumor with excellent prognosis with surgical resection alone.

Keywords: Chronic inflammation, EBV, FA-DLBCL, Pyothorax-associated lymphoma (PAL)

How to cite this article

Vijayalakshmi M, Kaur P, Thirumala V, Singh A, Thirumala S. Fibrin-associated diffuse large B cell lymphoma involving kidney: A rare occurrence—Case report and review of the literature. *J Case Rep Images Pathol* 2019;5:100030Z11VM2019.

Vijayalakshmi M¹, Puneet Kaur², Thirumala V³, Singh A⁴, Thirumala S⁵

Affiliations: ¹Senior Resident, Department of Pathology, Madurai Medical College, Tamil Nadu, India; ²Senior Resident, Department of Pathology, Dayanand Medical College, Punjab, India; ³Medical Student, UTMB, Galveston, Texas, USA; ⁴Associate Professor, Department of Pathology, Dayanand Medical College, Punjab, India; ⁵Director of Surgical Pathology, AmeriPath Lubbock, Lubbock, Texas, USA.

Corresponding Author: Thirumala S, MD, 1912 Aberdeen Ave, Lubbock, Texas 79407, USA; Email: sdthirumala@gmail.com

Received: 12 July 2019

Accepted: 04 September 2019

Published: 23 September 2019

Article ID: 100030Z11VM2019

doi: 10.5348/100030Z11VM2019CR

INTRODUCTION

Diffuse large B cell lymphoma (DLBCL) associated with chronic inflammation is a lymphoid neoplasm occurring in the context of long standing chronic inflammation and showing association with Epstein–Barr virus (EBV) [1]. World Health Organization classifies DLBCL associated with chronic inflammation into two groups, namely, PAL and FA-DLBCL. Incidental EBV-associated atypical lymphoid proliferation and microscopic DLBCL occurring in pseudocysts are the terminologies commonly used to describe this later entity FA-DLBCL. These neoplasms tend to occur in unusual sites including heart, brain, in the walls of pseudocysts including spleen, kidney, adrenal, para-testicular area, and rarely in ovarian teratoma. Often, these tumors are associated with vascular thrombi and cardiac prosthesis and rarely have been described in association with chronic osteomyelitis, metallic implants, and chronic skin ulcers [2–4]. Though the prototypic PAL is described to be aggressive with lymphoma-associated mortality, FA-DLBCL is indolent with excellent outcome, regardless of therapy. Surgical excision is curative in most cases.

CASE REPORT

A 60-year-old male patient presented with abdominal distension and pain for six months duration. An abdominal computed tomographic scan with contrast showed a large hypodense mass, measuring 8.5 × 8.2 × 6.5 cm involving the lower pole of right kidney with calcifications and mural thickening (Figure 1). Laboratory investigations were within normal limits. His hemoglobin was 12.3 g/dl (ref.

12.0–16.0), creatinine 0.70 mg/dl (ref. 0.6–1.3), blood urea nitrogen 10 mg/dl (ref. 7–21), and total protein 7.8 g/dl (ref. 6.4–8.2). The patient underwent a right nephrectomy in view of complex cystic mass with a suspicion of neoplastic etiology including renal cell carcinoma.

Grossly, a well circumscribed and encapsulated mass was identified arising from the lower pole of right kidney. On histologic evaluation, a cyst arising out of the lower pole of kidney was noted with large areas of fibrin and amorphous debris. Exhaustive sampling of the cyst wall was performed for histologic evaluation. On microscopy, the cyst wall revealed clusters and aggregates of large atypical cells with prominent nucleoli (Figures 2 and 3). These cells were positive with antibodies against CD20 (Figure 4), and for nongerminal center B cell markers including MUM1, PAX5, and CD30 (Figure 5). Other immunohistochemical stains including AE1/3, CD3, CD68, CD10, BCL6, CD138, ALK1, and CK8/18 were negative. Brisk proliferation was observed (~80%) by Ki-67 stain. The tumor cells were positive for EBV by *in situ* hybridization while C-MYC rearrangement was not detected by fluorescent *in situ* hybridization. A Congo red stain for amyloid, Gomori Methenamine Silver & Periodic acid–Schiff for fungus, and Ziehl–Neelsen stain for acid fast bacilli were negative. Based on morphology and immunohistochemical profile, a diagnosis of fibrin-associated EBV positive diffuse large B cell lymphoma was rendered.

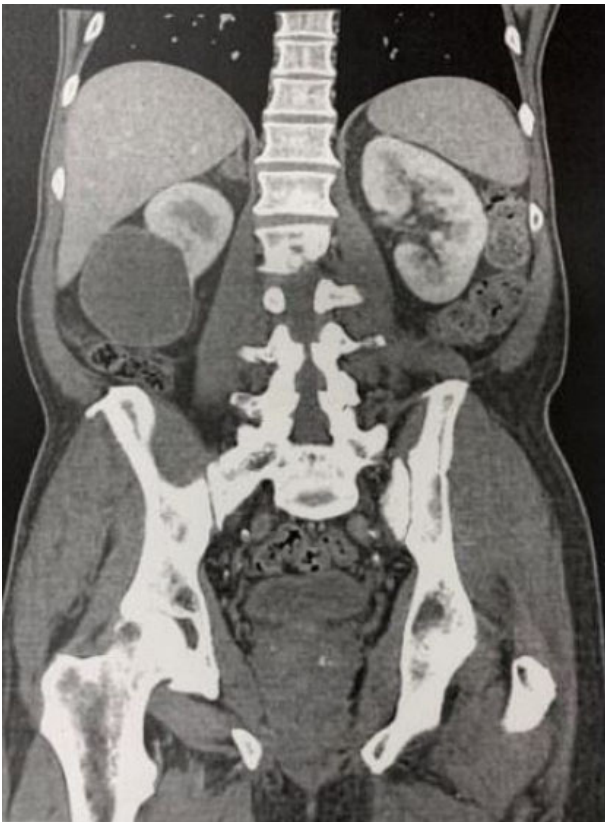


Figure 1: Computed tomography (CT) scan showing large cystic mass arising out of the lower pole of kidney.

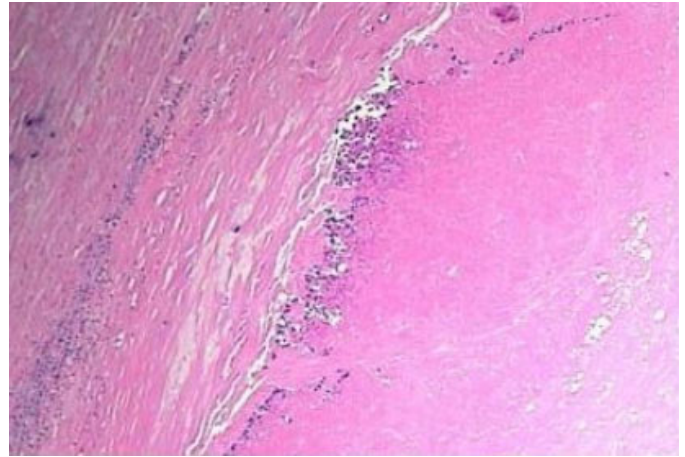


Figure 2: Cyst showing presence of eosinophilic fibrin material with inflammatory infiltrate (H&E × 20).

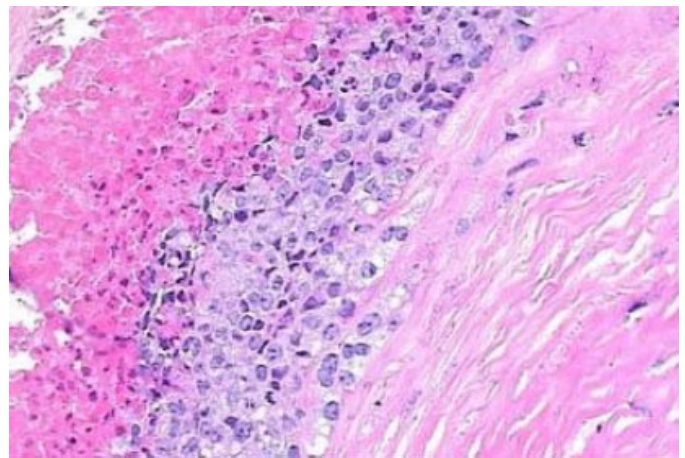


Figure 3: Large cells with abundant cytoplasm with pleomorphic nuclei, prominent nucleoli, and dispersed nuclear chromatin (H&E × 40).

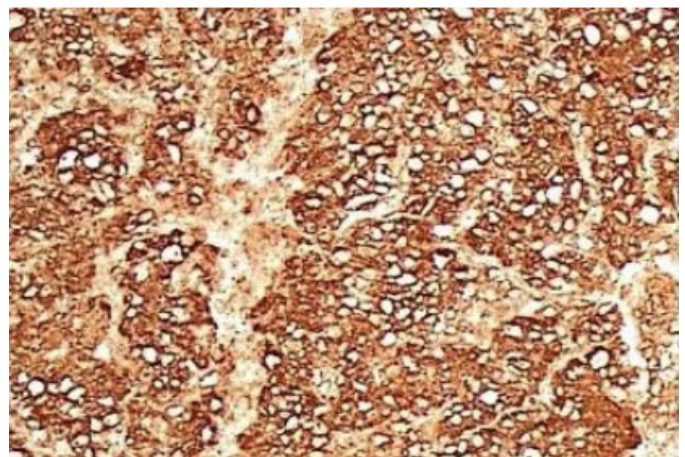


Figure 4: CD20 immunohistochemical stain.

DISCUSSION

Fibrin-associated diffuse large B cell lymphoma is an unusual form of DLBCL associated with chronic inflammation. Suggestions have been made to rename

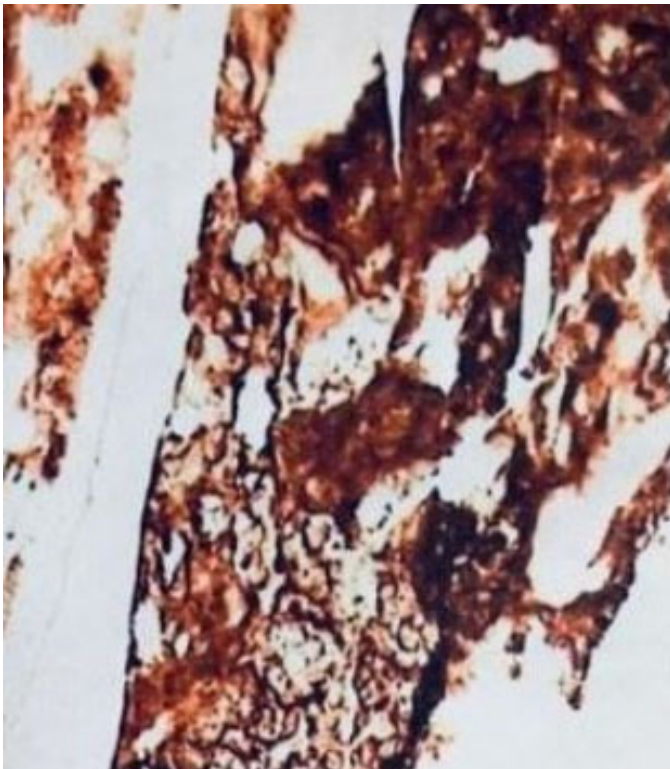


Figure 5: CD30 immunohistochemical stain.

this group of lymphomas as fibrin-associated EBV+ large B cell lymphoma to distinguish these tumors from PAL [5]. Pyothorax-associated lymphoma is prototypical chronic inflammation-associated lymphoma with high risk of lymphoma-related mortality. Pyothorax-associated lymphoma is associated with frequent genetic alterations including TP53 mutations and MYC amplifications [6]. On the other hand, FA-DLBCL is a rare subtype of DLBCL, nonmass forming lesions that are discovered incidentally on imaging studies or in specimens examined for other pathologic conditions. Boyer et al. [5] found relatively lower genetic complexity in fibrin-associated EBV-positive large B cell lymphoma in their study of 12 cases.

Fibrin-associated diffuse large B cell lymphoma has been discovered incidentally in atrial myxomas, thrombi associated with endovascular grafts, in chronic hematomas and in the walls of pseudocysts. Gruver et al. [3] in a meta-analysis spanning over 30 years observed a total of 14 cardiac lymphomas, 6 of them primary cardiac lymphomas and 8 secondarily involving cardiac structures. These authors found that FA-DLBCL constituted to 21% of all cardiac lymphomas or a total of three cases. Two of the patients in that study were positive for EBV (latency type III) but none were positive for human herpes virus-8 latent nuclear antigen. In all cases, the tumors were of nongerminal center immunophenotype. All three patients in the study were free of lymphoma after chemotherapy, and the longest disease free survival observed in one patient was 39 months. Boyer et al. [5] in 2017 published the largest series of 12 cases of FA-DLBCL

to date in the English language literature. The ages of the patients in their study ranged from 25 to 79 years with an M:F ratio of 3. In all 12 cases, the lymphoma was incidentally discovered involving atrial myxomas in three patients, thrombi associated with endovascular grafts in three patients, chronic hematomas in two patients and pseudocysts in four patients. Tumors in all these patients were of nongerminal center type with type III EBV latency and were negative for MYC rearrangements. None of the 12 patients in their study had bone marrow involvement.

The pathogenesis of FA-DLBCL is not well established. Though chronic inflammation is considered to be the inciting factor, relatively short duration of disease course in many cases argue against this theory. It is postulated that EBV affects and invades naïve B cells that are transformed and immortalized through reactivation or alternative lengthening of telomeres [5]. Alternatively, expression of PDL-1 by lymphoid cells infected with EBV could play a role by causing immune evasion of the cells and tumor growth as was observed in plasmablastic lymphomas that are EBV positive [7].

CONCLUSION

In summary, we report a rare case of FA-DLBCL involving the kidney. To the best of our knowledge, only one other case involving the kidney has been reported in the literature [8]. Thorough sampling of the cyst wall with careful microscopic examination, application of immunohistochemical stains, and testing for EBV are crucial for arriving at correct diagnosis. Fibrin-associated diffuse large B cell lymphoma is an indolent tumor with excellent cure rates by surgical excision alone, rarely requiring R-CHOP therapy in nonsurgical candidates.

REFERENCES

1. Chan JKC, Aozasa K, Gaulard P. Diffuse large B-cell lymphoma associated with chronic inflammation. In: Swerdlow SH, Campo E, Harris NL, Pileri SA, editors. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues. 4ed. Lyon, France: IARC Press; 2017.
2. Loong F, Chan AC, Ho BC, et al. Diffuse large B-cell lymphoma associated with chronic inflammation as an incidental finding and new clinical scenarios. *Mod Pathol* 2010;23(4):493–501.
3. Gruver AM, Huba MA, Dogan A, Hsi ED. Fibrin-associated large B-cell lymphoma: Part of the spectrum of cardiac lymphomas. *Am J Surg Pathol* 2012;36(10):1527–37.
4. Miller DV, Firchau DJ, McClure RF, Kurtin PJ, Feldman AL. Epstein-Barr virus-associated diffuse large B-cell lymphoma arising on cardiac prostheses. *Am J Surg Pathol* 2010;34(3):377–84.
5. Boyer DF, McKelvie PA, de Leval L, et al. Fibrin-associated EBV-positive large B-cell lymphoma: An indolent neoplasm with features distinct from diffuse

- large B-cell lymphoma associated with chronic inflammation. *Am J Surg Pathol* 2017;41(3):299–312.
6. Hongyo T, Kurooka M, Taniguchi E, et al. Frequent p53 mutations at dipyrimidine sites in patients with pyothorax-associated lymphoma. *Cancer Res* 1998;58(6):1105–7.
 7. Laurent C, Fabiani B, Do C, et al. Immune-checkpoint expression in Epstein-Barr virus positive and negative plasmablastic lymphoma: A clinical and pathological study of 82 patients. *Haematologica* 2016;101(8):976–84.
 8. Lee MC, Aron M, Hsi ED, Hert BR, Pohlman B, Gill IS. Age-related Epstein-Barr virus-associated lymphoproliferative disorder presenting as renal mass. *Urology* 2009;74(3):505–8.

Author Contributions

Vijayalakshmi M – Conception of the work, Design of the work, Acquisition of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Puneet Kaur – Conception of the work, Design of the work, Acquisition of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Thirumala V – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Singh A – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Thirumala S – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

Copyright

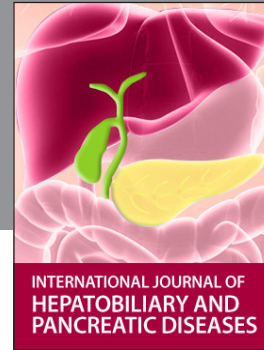
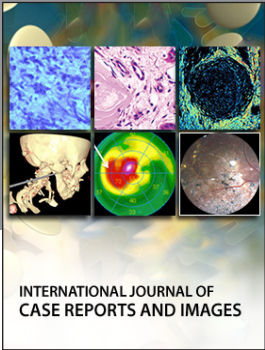
© 2019 Vijayalakshmi M et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.

Access full text article on
other devices



Access PDF of article on
other devices





Submit your manuscripts at
www.edoriumjournals.com

