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CORRESPONDENCE

Cryoablation for unresectable unicentric Castleman disease

To the Editor:

Castleman disease (CD) is a rare lymphoproliferative disorder characterized by histological features, including lymphoid follicle hyperplasia and marked capillary proliferation with endothelial hyperplasia. The diagnosis is made in combination with clinical and pathological findings. CD is further classified into unicentric (UCD) and multicentric based on the extent of lymph node involvement and clinical symptoms.[1] Patients with UCD often have a single or a few lymph nodes without systemic symptoms,[2] although some might have abdominal discomfort or rash.

UCD most commonly involves abdominal and mediastinal lymph nodes and is treated with surgical resections.[3] However, there is no established treatment for symptomatic yet unresectable cases due to the proximity to critical anatomic structures such as large vessels.[4] Here, we report a case of UCD that was successfully treated with cryoablation.

A 43-year-old male without significant past medical history was referred to our institution for consultation in the evaluation of lymphadenopathy of undetermined etiology. Two years prior to the initial presentation, he began to have abdominal pain. Computed tomography (CT) revealed a mass measuring 5.0 × 3.1 cm^2 adjacent to the right adrenal gland and retroperitoneal lymphadenopathy. The lesion was fluorodeoxyglucose (FDG) avid, demonstrating an SUV max of 10.5 (Figure 1A,B). An extensive infectious disease workup was unremarkable. Initial laparoscopic excisional biopsy of a perigastric lymph node showed intact lymph node architecture with follicular hyperplasia and interfollicular areas with small lymphocytes and abundant plasma cells. The features were reactive, but not specific for any etiology. He was observed with periodic positron emission tomography/CT, which continued to show continued FDG avid lymphadenopathy.

Initial workup at our institution revealed elevated serum interleukin 6 (IL-6) level to 14.9 pg/mL (reference range: <6.4 pg/mL) and immunoglobulin G (IgG) to 2250 mg/dL (reference range: 767–1590 mg/dL). As all serum IgG subtypes were elevated and the patient did not have signs of infiltrative diseases, immunoglobulin G4-related disease (IgG4-RD) was considered unlikely. Open surgical resection of a pericaval lymph node (4.4 × 3.4 × 5.3 cm^3; SUV 10.1) revealed findings consistent with mixed hyaline vascular and plasma cell type CD. Proximity to the inferior vena cava precluded complete resection. Due to the unresectable disease, the decision was made to pursue nonsurgical debulking of the representative mass with pharmacological treatment followed by cryoablation. He received four doses of rituximab which only yielded a modest reduction in the size of the mass (4.5 × 2.7 × 4.8 cm^3). He therefore received four doses of siltuximab, which downsized the mass to 3.9 × 1.4 × 3.0 cm^3 (Figure 1C). Given its proximity to the right adrenal gland, he received alpha-blockade during the 10 days prior to ablation due to concern for catecholamine surge. Percutaneous cryoablation was performed without complications. After the course of treatment, his symptoms drastically improved with near complete resolution. Over the course of 2 years postprocedure, restaging CT scans showed progressive shrinkage of the mass as well as resolution of previously enlarged retroperitoneal lymph nodes (Figure 1D). He did not require any further therapy after the cryoablation. The change in his hemoglobin, C-reactive protein, and IgG are shown in Figure S1. At his follow-up visit 2 years after cryoablation and 3 years postdiagnosis, his serum IL-6 level was normal at 2.3 pg/mL, and he was without clinical symptoms.

To date, this is the first case of UCD successfully treated with a combination of pharmacological therapy and cryoablation. The standard treatment for UCD is surgical resection, which offers a high cure rate and is the first-line approach, especially for tumors located in accessible regions such as mediastinal lymph nodes.[5] However, in cases where the mass is located near critical anatomical structures, such as large blood vessels, complete surgical resection may be challenging or impossible, necessitating alternative therapeutic approaches. While UCD is generally considered benign with low long-term mortality rates, previous literature suggested that patients who do not undergo complete surgical resection have higher mortality mainly due to paraneoplastic pemphigus, follicular dendritic cell sarcoma, or lymphoma.[6] Thus, establishing alternative therapeutic interventions in unresectable UCD is crucial, especially if the patient is symptomatic. Several reported cases describe a variety of interventions for unresectable UCD, including rituximab, tocilizumab, glucocorticoids, or embolization. However, these interventions mainly yield only partial responses.[7]

Cryoablation is a minimally invasive technique that induces coagulative necrosis in the target tissues. The approach has been successfully employed in the treatment of various solid tumors, including kidney cancer and metastatic adrenal tumors. Cryoablation offers several advantages over traditional surgical resection, including a lower risk of complications, shorter recovery times, and the ability to target the tumor while preserving surrounding tissues precisely. In this case, the procedure was performed similarly to the cryoablation of adrenal tumors.[8–10] The use of cryoablation following pharmacological therapy, as in the present case, may be a viable option for long-term disease control in unresectable UCD cases in a challenging anatomical location.

Currently, there is no standard approach for unresectable UCD. The successful use of cryoablation in the present case highlights its

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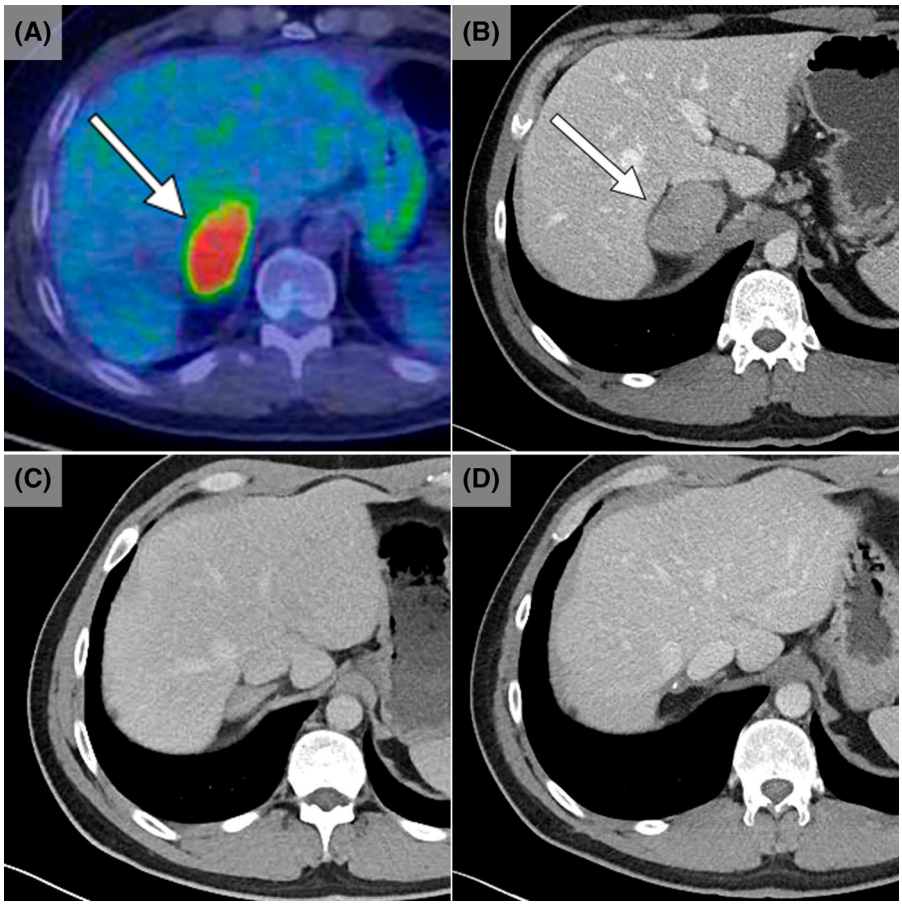

FIGURE 1 Radiographic findings of the Castleman disease lesion.
(A) Fluorodeoxyglucose positron emission tomography-computed tomography (CT) demonstrating a mass close to the right adrenal gland with SUV max of 10.5.
(B) Pretreatment contrast CT showed the mass measured 5.0 × 3.1 cm^2.
(C) Postrituximab and siltuximab contrast CT showed a modest reduction in the size of the mass to 3.9 × 1.4 × 3.0 cm^3.
(D) Postablation contrast CT showed a resolution of the mass.

potential as a viable alternative to surgery to treat such cases. Further research is needed to establish standardized protocols, evaluate long-term outcomes of cryoablation in UCD, and compare the efficacy of cryoablation with other focally ablative techniques such as embolization, stereotactic body radiotherapy, and microwave ablation.

AUTHOR CONTRIBUTIONS

YN wrote the manuscript. MC, PM, MH, RLK, AT, and AD revised the manuscript and provided critical feedback.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data available on request from the authors.

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