CASE REPORT

Spontaneous regression of interdigitating dendritic sarcoma in a patient with concurrent small lymphocytic lymphoma

Tamer Khashab,¹ Lalit Sehgal,¹ L Jeffrey Medeiros,² Felipe Samaniego¹

¹Department of Lymphoma and Myeloma, The University of Texas MD Anderson Cancer Center, Houston, Texas, USA

²Department of Hematopathology, The University of Texas MD Anderson Cancer Center, Houston, Texas, USA

Correspondence to

Dr Felipe Samaniego, fsamaniego@mdanderson.org

Accepted 21 May 2015

SUMMARY

Interdigitating dendritic cell sarcoma (IDCS) is a rare tumour; only seven cases of IDCS associated with chronic lymphocytic leukaemia/small lymphocytic lymphoma (CLL/SLL) have been reported. We present the case of a 60-year-old man who presented with fevers, night sweats and significant unintentional weight loss. Investigations led to a diagnosis of synchronous SLL and IDCS. Subsequent fluorodeoxyglucose (FDG) positron emission tomography CT (PET-CT) imaging revealed an unusual clinical course with spontaneously resolving highly metabolic lesions. After 42 months of follow-up, the patient remains free of clinical symptoms and evidence of IDCS.

BACKGROUND

Interdigitating dendritic cell sarcoma (IDCS) belongs to a group of dendritic and histiocytic neoplasms that together comprise <1% of tumours in lymph nodes.^{1–6} The rare occurrence of these neoplasms makes them difficult to diagnose; in addition, they have no defined therapies. This report represents a case of fluctuating metabolic activity and lymphadenopathy that are unlikely to be related to small lymphocytic lymphoma (SLL) and are suspected to reflect the presence of IDCS that appears to have undergone spontaneous resolution.

CASE PRESENTATION

A 60-year-old man presented to his physician with persistent low-grade fevers, night sweats and unintentional 13 kg weight loss representing 11% of his body weight. The patient's past medical history revealed no previous malignancies, infections or contact with ill persons. His physical examination was normal and showed no enlarged lymph nodes; routine laboratory results were within normal limits. Because of the patient's persistent fever and night sweats he was admitted to his local hospital for further investigation.

INVESTIGATIONS

On initial work up, CT revealed lymphadenopathy in the right pelvis. A CT-guided core needle biopsy of a right pelvic lymph node was morphologically suspicious for lymphoma and flow cytometry immunophenotypic analysis showed a monotypic B-cell population, positive for κ (moderate intensity), CD5, CD20 (moderate) and CD23. The differential diagnosis included CLL/SLL or, possibly, mantle cell lymphoma, and an excisional biopsy was recommended.

Excisional biopsy of a right iliac lymph node showed two components: small cell lymphoma and a second spindle cell component. The lymphoma cells were mostly small and round with fewer larger paraimmunoblasts (figure 1A, B). By immunohistochemistry, the lymphoma cells were positive for CD5, CD20, CD43, BCL-2 and PAX-5, and were negative for CD21 and S100 protein. Flow cytometry showed a monotypic CD5+ CD23+ B-cell population, as was seen before. In aggregate, these findings supported the diagnosis of SLL. The second spindle cell component was composed of cells that resembled histiocytes with cytological atypia, and mitotic figures were easily identified (figure 1C). Large areas of coagulative necrosis were also present. By immunohistochemistry, the spindle cells were positive for CD68, CD163 (figure 1D) and S100 protein, and were negative for CD1a, CD21 and PAX-5. The morphology and immunophenotype of this spindle cell component supported the diagnosis of IDCS. There was no evidence of mycobacteria, fungi or Epstein-Barr virus infection.

A posterior iliac crest bone marrow aspiration and biopsy conducted showed normocellular bone marrow and no evidence of a lymphoproliferative disorder. A complete blood count and cell differential measures were normal. However, a PET-CT scan performed 1 month after excisional biopsy showed enlarged, fluorodeoxyglucose (FDG)-avid lymph nodes in the right pelvis, right retrocrural, left para-aortic retroperitoneal and left supraclavicular regions.

Five months later, B symptoms had resolved and a PET-CT scan was performed, which surprisingly showed complete resolution of all FDG-avid lesions (figure 2A). Serological testing was negative for human immunodeficiency virus antibody type 1/2, hepatitis B core antibody, hepatitis B surface antigen, human T cell lymphotropic virus antibody type 1/2, and hepatitis C virus antibody. Considering the dramatic resolution of FDG-avid lymphadenopathy and B symptoms, it was recommended that the patient be monitored without specific therapy.

DIFFERENTIAL DIAGNOSIS

- SLL with concurrent IDCS
- SLL with concurrent follicular dendritic cell sarcoma

TREATMENT

Treatment for SLL was not recommended: the patient lacked symptoms associated with SLL, and had spontaneous resolution of lymphadenopathy of

CrossMark

To cite: Khashab T, Sehgal L, Medeiros LJ, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-209014

Figure 1 Lymph node biopsy specimen involved by small lymphocytic lymphoma (SLL) and interdigitating dendritic cell sarcoma (IDCS). (A) Low-power image showing an area of small lymphocytes (left of field) consistent with SLL and large areas of IDCS composed of spindle-shaped cells (right of field). (B) Higher power image of SLL showing small round lymphocytes and scattered paraimmunoblasts. (C) Oil immersion image of IDCS showing spindle-shaped cells with atypia and a mitotic figure in this field. (D) Immunohistochemical stain for the histiocytic marker CD163 showing that the spindle-shaped cells are positive. The cells were also positive for CD68 and S100 protein (not shown).

low-level metabolic activity that could be attributable to SLL. Treatment for IDCS was not recommended: there were no persistent lesions with IDCS, as assessed by imaging studies. The patient was recommended to have regular monitoring by PET-CT.

OUTCOME AND FOLLOW-UP

Eight months after the initial diagnosis of SLL, the patient developed painful enlarged lymph nodes on the left side of his neck. PET-CT scan disclosed FDG-avid cervical lymph nodes as well as a right axillary lymph node ([figure 2B](#)). However, 4 weeks later,

Figure 2 Interval fluorodeoxyglucose (FDG) positron emission tomography CT (PET-CT). The coronal view demonstrating FDG-avid lesions (red circles) and subsequent regression of these lesions on interval PET-CT scans.

at the time of scheduled biopsy, the cervical lymphadenopathy had resolved and biopsy was cancelled. The pattern of fluctuating metabolic lesions continued with a flare up of FDG-avid right axillary lymph nodes at 11 months (figure 2C). At 26 months follow-up, a 3.0 cm×2.8 cm retroperitoneal lesion, with a standard uptake value (SUV) of 30.1, appeared without associated symptoms (figure 2E). A CT-guided core needle biopsy performed 1 month later revealed that the lesion was already regressing (2.5 cm) and biopsy showed normal lymph node tissue with no evidence of SLL or IDCS. A follow-up PET-CT scan at 29 months showed that the lesion had completely disappeared without therapy and with patient confirmation of not taking any in-home remedies. Again, this pattern of lesion evolution and resolution continued (figure 2H). The last PET-CT scan, performed at 42 months (figure 2H), showed an absence of FDG-avid lymphadenopathy; the patient is alive and well at the time of writing this report.

DISCUSSION

Less than 1% of all malignancies are dendritic and histiocytic neoplasms. They are classified into two groups based on their cellular origin from either haematopoietic stem cells or stromal-derived dendritic cell types. Malignancies derived from haematopoietic stem cells include IDCS, histiocytic sarcoma and Langerhans cell histiocytosis, whereas follicular dendritic cell sarcoma (FDSC) and fibroblastic reticular cell tumours are stromal-derived neoplasms.⁶

IDCS is a neoplasm derived from interdigitating dendritic cells, which are antigen-presenting cells found in the paracortex of lymph nodes and periarteriolar lymphoid sheaths of the spleen.⁷ The tumour cells typically form whorls of spindle-to-ovoid-shaped cells, but histological diagnosis is not precise because FDSC shares the same morphological characteristics, making immunophenotyping necessary for specific diagnosis.⁶ IDCS lacks follicular dendritic cell markers such as CD21, CD23 and CD35,⁸ but is positive for CD68 and S100 protein.^{7,8}

A recent pooled analysis of 100 IDCS cases revealed a median age at diagnosis of 56.5 years, with male-to-female ratio of 1.4:1.⁹ About 50% of patients presented with isolated lymphadenopathy, 28% had combined lymph node and extranodal disease and 25% had only extranodal lesions. While B symptoms are not a typical feature of IDCS, the study reported typical B symptoms in 11 of 100 cases, similar to our patient's initial presentation.

There are no definitive guidelines for treatment of IDCS. Conventional management for localised IDCS is surgical resection.¹⁰ Metastatic IDCS is typically treated with combination chemotherapy, although improvements in survival have been not established and about 50% of patients die due to progression of the IDCS. Our patient received no treatment of any type. A literature report shows that few patients with IDCS elected not to receive treatment,⁹ but none showed a pattern of fluctuating nodules or tumours, as in this case. One case of FDSC showed spontaneous partial resolution of 70% of the original tumour volume.¹¹ The residual lesion remained progression free for 4 years, suggesting that this group of dendritic and histiocytic cancers can share properties of non-proliferation and regression.

Our patient had an unusual disease course with rapid changes in metabolic activity of different lymph nodes on serial PET-CT scans, with the highest activity (SUV 30.1) observed at 26 months of follow-up. An SUV >30 against a history of SLL almost always represents transformation to large B-cell lymphoma, which has a progressive and unrelenting course that

requires intense chemotherapy. The sudden appearance of a large lymph node with an SUV of 30.1 is unlikely to be present in SLL, and, based on our clinical experience with patients with untreated SLL, FDG activity changes never exceeded 0.6 SUV/month. Thus, a sudden appearance and disappearance of a lesion with an SUV of 30.1 is clearly atypical for SLL. Mindful of the limited tissue sampling, the negative core needle biopsy conducted after 26-month follow-up does not exclude active disease. Considering the patient's extensive evaluation, including normal laboratory data and negative bone marrow examination, tissue cultures and viral serologies, our best assessment is that the FDG-avid lymphadenopathy was caused by the waxing and waning of IDCS.

These findings suggest that dendritic cell sarcomas, including IDCS, can have a highly variable course and that therapy should be reserved for those with established tissue diagnoses and demonstrated evidence of disease progression.

Patient's perspective

I went into this knowing about my cancer diagnoses with a positive attitude. I also understood my condition might become complex and it turned complex with the discovery of a second cancer. It was a relief to know that no therapy was needed. Even 4 years after my cancer diagnoses, I still have not needed therapy.

Learning points

- Interdigitating dendritic cell sarcoma (IDCS) is an extremely rare tumour and an accurate diagnosis requires a high degree of suspicion, excisional biopsy, morphological analysis and immunohistochemical staining. Suspicion for IDCS is raised by the pathologist after finding of tissue with histiocytic differentiation.
- IDCS can be associated with other neoplasms either synchronously or metachronously.
- Therapy for IDCS should be based on conclusive evidence of clinically aggressive disease and demonstrated clinical progression.
- Therapy for small lymphocytic lymphoma (SLL) is initiated only after confirmation of progression of lymphoma and appearance of symptoms related to lymphoma.

Acknowledgements The authors thank Fran Dressman for assistance in preparing this case report.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Vasef MA, Zaatari GS, Chan WC, *et al.* Dendritic cell tumors associated with low-grade B-cell malignancies. Report of three cases. *Am J Clin Pathol* 1995;104:696–701.
- 2 Gaertner EM, Tsokos M, Derringer GA, *et al.* Interdigitating dendritic cell sarcoma. A report of four cases and review of the literature. *Am J Clin Pathol* 2001;115:589–97.

- 3 Cossu A, Deiana A, Lissia A, *et al.* Synchronous interdigitating dendritic cell sarcoma and B-cell small lymphocytic lymphoma in a lymph node. *Arch Pathol Lab Med* 2006;130:544–7.
- 4 Fraser CR, Wang W, Gomez M, *et al.* Transformation of chronic lymphocytic leukemia/small lymphocytic lymphoma to interdigitating dendritic cell sarcoma: evidence for transdifferentiation of the lymphoma clone. *Am J Clin Pathol* 2009;132:928–39.
- 5 Shao H, Xi L, Raffeld M, *et al.* Clonally related histiocytic/dendritic cell sarcoma and chronic lymphocytic leukemia/small lymphocytic lymphoma: a study of seven cases. *Mod Pathol* 2011;24:1421–32.
- 6 Swerdlow SH, Campo E, Harris NL, *et al.* *WHO classification of tumours of haematopoietic and lymphoid tissues*. 4th edn. Lyon: France International Agency for Research on Cancer, 2008:354–67.
- 7 Steinman RM, Pack M, Inaba K. Dendritic cells in the T-cell areas of lymphoid organs. *Immunol Rev* 1997;156:25–37.
- 8 Ohtake H, Yamakawa M. Interdigitating dendritic cell sarcoma and follicular dendritic cell sarcoma: histopathological findings for differential diagnosis. *J Clin Exp Hematop* 2013;53:179–84.
- 9 Saygin C, Uzunaslan D, Ozguroglu M, *et al.* Dendritic cell sarcoma: a pooled analysis including 462 cases with presentation of our case series. *Crit Rev Oncol Hematol* 2013;88:253–71.
- 10 Perkins SM, Shinohara ET. Interdigitating and follicular dendritic cell sarcomas: a SEER analysis. *Am J Clin Oncol* 2013;36:395–8.
- 11 Caces DB, Daniel S, Paredes-Tejada JM, *et al.* Spontaneous regression of follicular dendritic cell sarcoma. *J Clin Oncol* 2012;30:e24–6.

Copyright 2015 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow