

Follicular dendritic cell sarcoma associated with hyaline-vascular castleman's disease

Ebru Cakir,¹ N. Engin Aydin,² Emine Samdanci,³ Nese Karadag,⁴ Sadegul Sayin,⁵ Ahmet Kizilay⁶

Abstract

Follicular dendritic cell sarcoma (FDCS) of the head and neck region, associated with Castleman's disease (CD), is an extremely rare entity. To the best of our knowledge, we report the first case demonstrating the transformation of the former into the latter as documented in the same lymph node dissection material.

A 45-year-old female presented to our hospital with right sided neck swelling. Radiologic imaging showed a well defined 3.5x3.5cm mass of soft tissue at the right side of the neck with multiple bilateral cervical lymph nodes. Excision of the right neck mass with lymph node dissection was performed. Microscopic examination and immunohistochemical findings showed features of follicular dendritic cell sarcoma. The associated lymph nodes exhibited changes consistent with hyaline-vascular type CD, follicular dendritic cell hyperplasia and foci of overgrowth in which FDCS possibly evolved.

This report confirms the evolving of FDCS in the setting of follicular dendritic cell hyperplasia occurring in Castleman's disease.

Keywords: Follicular dendritic cell sarcoma, Castleman's disease, Head and neck.

Introduction

Follicular dendritic cell sarcoma (FDCS) is a rare neoplasm, characterized by a neoplastic proliferation of spindle cells to ovoid morphologic and immunophenotypic features of follicular dendritic cells. This rare entity can involve lymph nodes or extranodal sites such as the tonsil, palate, soft tissue, thyroid, gastrointestinal tract, liver and spleen.¹⁻⁹

Castleman's disease (CD) is a non-neoplastic lymphoproliferative disorder most commonly presenting as a mediastinal or cervical mass. In rare cases of Castleman's disease, FDCS may evolve in the setting of follicular dendritic cell hyperplasia and overgrowth.^{3,9} In the literature, 16 cases of FDCS have

been reported to be associated with CD and 6 of them were located in the head and neck region.³⁻⁸ This article reports the first case demonstrating the transformation of the CD to the FDCS as documented in the same lymph node dissection material.

Case Report

A 45-year-old female presented to our hospital with right sided neck swelling. She had a history of hyaline-vascular type CD nine and six years ago from parotid gland and cervical lymph nodes. On physical examination, she had a 3.5 cm palpable mass localized in the medial and upper 1/3 of sternocleidomastoid muscle with well defined borders and was hard in consistency. An old insicion scar

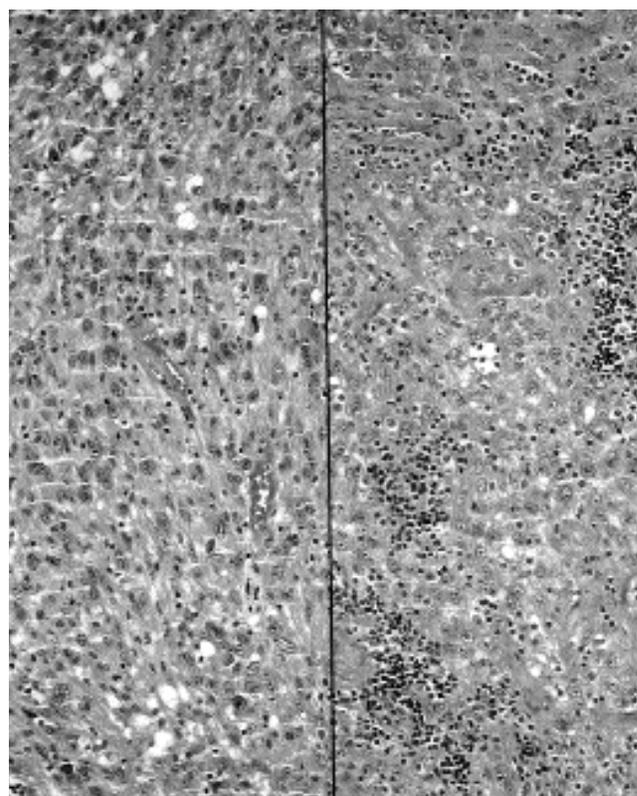


Figure-1: The tumour cells had indistinct cell borders, eosinophilic cytoplasm and slightly pleomorphic nuclei with distinct nucleoli (left) and the tumour was infiltrated by small lymphocytes which were typically aggregating around the blood vessels (right) (H&E, X200).

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¹⁻⁵Department of Pathology, ⁶Department of Otorhinolaryngology, Inonu University, Faculty of Medicine, Malatya, Turkey.

Correspondence: Ebru Cakir. Email: arabaci.ebru@gmail.com

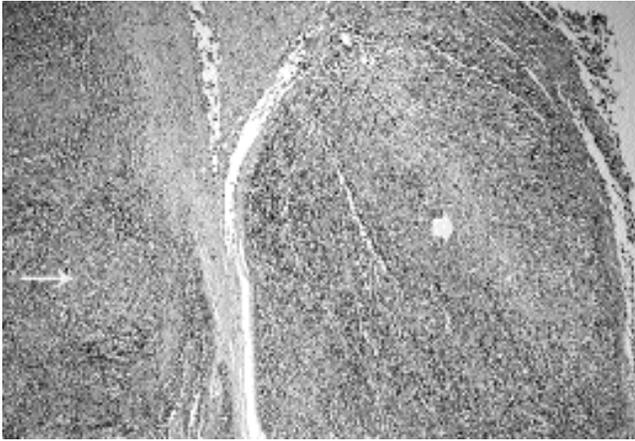


Figure-2: Foci of Castleman's disease and follicular dendritic cell overgrowth areas (fine arrow) with nearby follicular dendritic cell sarcoma (broad arrow) (H&E, X40).

was observed in the region of parotid gland. There were associated multiple cervical lymph nodes. The biochemical analysis were normal. Computerized tomography and MR imaging showed a well defined 3.5x3.5cm mass of soft tissue at the right side of the neck in the posteromedial side of sternocleidomastoid muscle and multiple bilateral cervical lymph nodes with a maximum size of 2cm. Excision of the right neck mass with lymph node dissection was performed. On macroscopic examination, 18 lymph nodes were sampled from the dissected material. The largest lymph node was 3.5x3.5x3cm well circumscribed solid and nodular mass covered by a thin capsule.

On microscopic examination, seven out of eighteen lymph nodes showed diffuse sheets, vague nodules and whorls of neoplasm consisting of ovoid atypical cells admixed with small lymphocytes. The tumour cells had indistinct cell borders and a moderate amount of eosinophilic cytoplasm. The nuclei were slightly pleomorphic, with coarse chromatin and distinct nucleoli (Figure-1 right side). Nuclear pseudo-inclusions were observed. The mitotic rate was usually between 8-10 per 10 power fields. In some areas significant cytologic atypia with prominent pleomorphism, atypical mitotic figures were evident. The tumour was infiltrated by small lymphocytes which were typically aggregating around the blood vessels throughout the tumour (Figure-1 left side). Necrosis and areas of hyalinization were evident. Associated lymph nodes showed features of hyalin-vascular type of CD characterized by atrophic germinal centers surrounded by concentric arrangement of small lymphocytes creating an onion skin appearance. Some of these lymph nodes, exhibited prominent proliferation of cells showing morphologic features of follicular dendritic

cells with bland-looking ovoid nuclei, indistinct cell borders and small distinct nuclei. These cells were forming prominent whorling in some areas. These foci of follicular dendritic cell overgrowth was observed with nearby FDCS areas (Figure-2).

Immunohistochemical analysis showed that neoplastic cells in areas of follicular dendritic cells were diffuse positive for CD21 and vimentin, focal positive for S-100, CD23 and p53 (10%), negative for LCA, CD20, CD30, CD45RA, CD68, pancytokeratin, HHV-8 and EBV. Follicular dendritic cell overgrowth areas also showed positivity for CD21.

The patient had chemoradiotherapy and no recurrence was noted 4 months after surgery.

Discussion

Castleman's disease is a lymphoproliferative, hyperplastic or hamartomatous process with a benign clinical course.²⁻⁸ Solitary CD presents as a single mass often in the mediastinal, cervical or pulmonary lymph nodes. Generalized involvement of several nodes accompanied by systemic involvement is called as multicentric type of CD.⁸ Uncommon sites of involvement are oropharynx, nasopharynx, pericardium and soft tissues.¹⁰ The etiopathogenesis remains uncertain but there are various hypotheses such as overproduction of IL-6, infection with human herpes virus 8, functional block of plasmacytoid monocytes, autoimmunity and dysplasia of follicular dendritic cells.²⁻⁴ There are some clinicopathologic conditions that might be associated with CD; paraneoplastic pemphigus, Kaposi's sarcoma, Hodgkin's lymphoma, nephrotic syndrome, temporal arteritis, myasthenia gravis, recurrent pleural effusion and FDCS.⁴

Follicular dendritic cell sarcoma is an uncommon tumour first described by Monda et al. in 1986.¹ It is an intermediate grade malignant neoplasm of reticular dendritic cell origin. The tumour presents as lymphadenopathy in one half to two thirds of cases, with one of the cervical lymph nodes being usually affected. Extranodal sites such as the tonsil, oral cavity, gastrointestinal tract, skin, liver and spleen are rarely involved.^{3,4,8}

There are fewer than 60 cases of FDCS reported to date and 16 of them were associated with CD. Six out of 16 cases were located in the head and neck region. The average age of these patients (3 female, 3 male) was 48.1 years (range 23-76 years). FDCS arose concomitantly with CD in three of them.³ Our patient was a 45-year-old female and had a diagnosis of hyaline-vascular type CD, 9 and 6 years before the initial diagnosis of FDCS.

Chan et al.³ demonstrated the progression of FDC proliferation in CD setting, through three sequential

biopsies. They mentioned that the possible basis of the association of these two entities was the aberrations in follicular dendritic cell networks as well as follicular dendritic cell dysplasia in some follicles in CD. Chan et al. also showed the expression of p53 protein in the FDCS and identified small numbers of p53 positive cells in the interfollicular zone of the previous CD sample suggesting a role of this tumour suppressor gene in the transformation process.³ Although there is no evidence of clonal relationship between CD and FDCS, CD is probably the precursor lesion followed by a hyperplasia-dysplasia-neoplasia sequence.

In the present case, there is an interval of 6 and 9 years between the diagnosis of CD and FDCS suggesting the existence of a pathogenetic link between these conditions. Moreover, associated lymph nodes of FDCS exhibit changes consistent with hyaline-vascular type CD and some of these areas clearly show proliferation and overgrowth of dendritic cells. Follicular dendritic cell sarcoma possibly evolved in the setting of follicular dendritic cell hyperplasia and overgrowth. The tumour also has a heterogeneous appearance with areas of low-grade malignancy associated with higher grade features of malignancy reflecting the different stages of malignant proliferation.

The histopathologic diagnosis of FDCS can be challenged without an associated or known history of CD. Differential diagnosis includes Hodgkin and non-hodgkin lymphomas and interdigitating dendritic cell sarcoma. In some cases of FDCS, tumour cells may resemble Reed-Sternberg cells and exceptionally cytokeratin, CD45 and CD20 can be expressed immunohistochemically. But FDCS is positive for one or more of the follicular dendritic cell markers such as CD21, CD35, CD23, KiM4p and CNA.42.^{8,9} CD21 recognizes the C3d receptor and has been demonstrated to be expressed in approximately 96% of the cases.⁸ The neoplastic cells of interdigitating dendritic cell sarcoma are negative for markers of follicular dendritic cells.^{8,9}

The treatment for FDCS is complete surgical resection with or without adjuvant radiotherapy or chemotherapy. Some authors advocate surgical removal of the regional lymphatic drainage system if metastasis is suspected on imaging.³ In the present case, CT and MR findings showed

lymph node involvement and lymph node dissection was performed. The role of adjuvant treatment remained uncertain. Some authors recommend chemotherapy or radiotherapy only when the tumour is aggressive, high volume and surgically unresectable.^{3,7} Local recurrences occurs in more than 50% of the cases and metastases is seen in about 25% of the patients.⁹

Conclusion

Follicular dendritic cell sarcoma of the head and neck region, associated with CD is an extremely rare entity. This report confirms the evolving of FDCS in the setting of follicular dendritic cell hyperplasia occurring in CD. This is the first case demonstrating the transformation of the former into the latter as documented in the same lymph node dissected material.

Disclosure:

This paper was presented at 21st National Pathology Congress, Izmir, Turkey.

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