

## Follicular dendritic cell sarcoma presenting as colonic intussusception

Masroor Hassan, Asim Qureshi, Nadira Mamoon, Zafar Ali

### Abstract

Follicular dendritic cell sarcoma (FDCS) is a rare intermediate grade sarcoma involving a variety of nodal and extra nodal sites. It has two histological subtypes, conventional and inflammatory pseudotumour like variant. We report this interesting case of FDCS presenting colonic intussusception at Shifa International Hospital, Islamabad, Pakistan. Conventional FDCS presenting as a colocolic intussusception is an unusual presentation, and to our knowledge, has never been reported previously. It has wide morphological spectrum on light microscopy and has characteristic immunoreactivity for dendritic cell markers (CD21, CD23, and CD35). Surgical excision is required in all cases while role of adjuvant chemotherapy and radiotherapy is not clearly demonstrated in literature.

**Keywords:** Follicular dendritic cell sarcoma, Intussusception.

### Introduction

FDCS is an intermediate grade sarcoma derived from follicular dendritic cells (FDC). Histologically it is classified into conventional and inflammatory pseudotumour like variant.<sup>1-3</sup> It is reported in all age groups. Aetiology is not well understood however association with Castleman's disease and Epstein Barr virus has been reported. Surgical excision is required in all cases while adjuvant therapy should be considered for tumours showing high grade histological features or having intra-abdominal location.

### Case Presentation

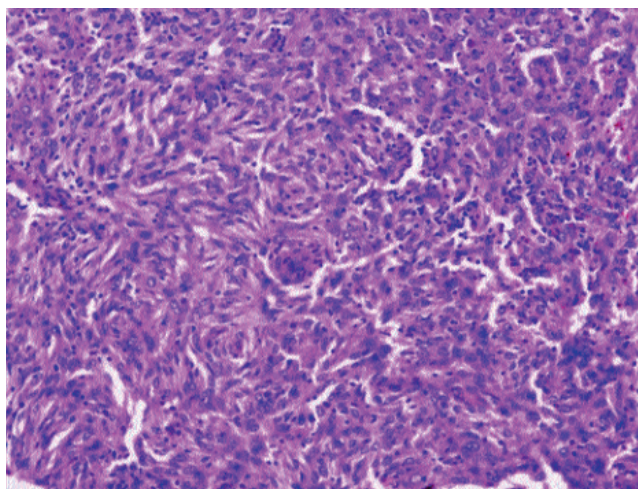
An 18 year old girl presented at outpatient department, Shifa International Hospital Islamabad Pakistan in March 2016 with a three months history of generalized abdominal pain along with constipation off and on. Ultrasound abdomen was performed which revealed a well circumscribed lesion adjacent to right kidney, measuring 63 x 49 mm, suggestive of an intussusception. Abdominal CT scan confirmed colocolic intussusception. Patient was planned for surgical resection. Resection of

Pathology Department, Shifa International Hospital, Islamabad, Pakistan.

**Correspondence:** Asim Qureshi. Email: asimqureshi32@hotmail.com



**Figure-1:** Gross appearance of the FDCS arising from transverse colon.

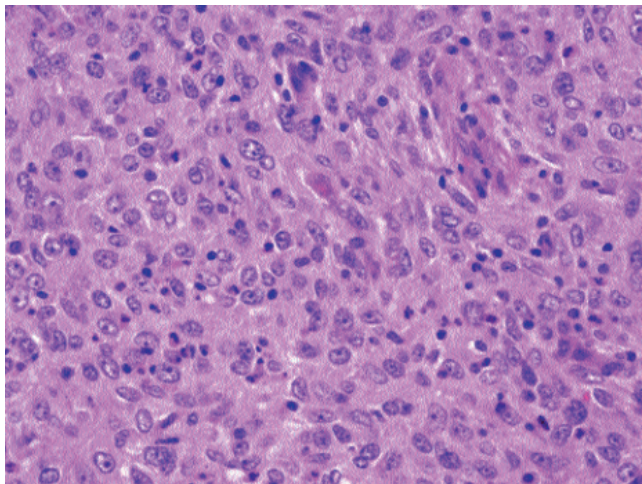


**Figure-2:** H & E section at 10x magnification. Note the prototype storiform appearance of FDCS with sprinkling of lymphocytes and neutrophils. Perivascular cuffing by small lymphocytes is also evident and irregularly shaped pseudovascular clefts.

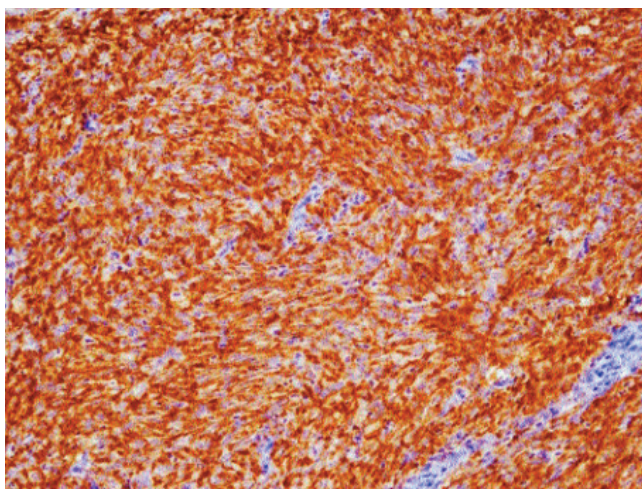
the affected segment of transverse colon was done and specimen was sent for histopathology.

There was a 4.0 x 3.0 x 2.5 cm, tan white, firm polypoidal growth in the resected specimen (Figure-1).

Light microscopy revealed a cellular lesion arranged in the form of fascicles. Focal whorls and pseudo-vascular



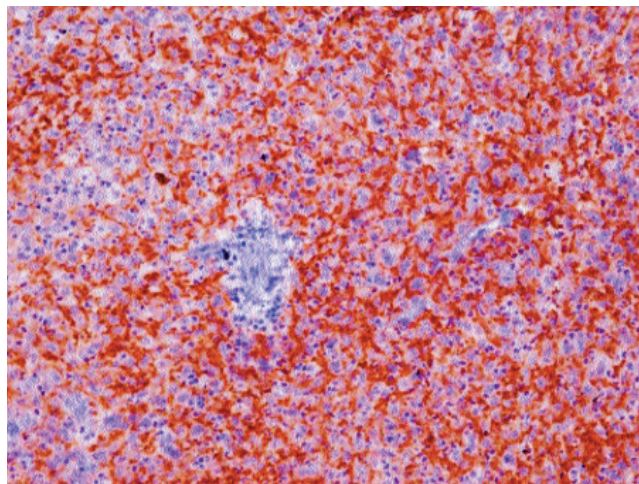
**Figure-3:** H & E section at 20x magnification showing round to spindle cells having oval nuclei, vesicular chromatin and distinct nucleoli.



**Figure-4:** Immunohistochemical stain showing strong positivity of CD21.

cleft formation along with cuffing of lymphocytes around blood vessels was noted. In some areas storiform pattern was seen. There was marked infiltration by neutrophils, eosinophils and lymphocytes (Figure-2). Individual cells were spindly to polygonal, having round to oval vesicular nuclei, conspicuous nucleoli and indistinct cell borders (Figure-3). The lesion was infiltrating muscularis propria. Nuclear atypia was mild to moderate and mitosis were 2-3/10hpf. No evidence of necrosis was seen. Resection margins were clear.

Immunohistochemically, tumour cells were strongly positive for dendritic cell markers CD21 and CD23 (Figure-4 and 5). CD68 and S-100 were focally expressed. Tumour cells were negative for CD117, DOG1, CD1a, SMA and ALK.



**Figure-5:** Immunohistochemical stain showing strong positivity of CD23.

On the basis of morphology and immunohistochemistry, it was diagnosed as FDCS-conventional type.

Patient was treated by surgical excision only and was found free of recurrence after 5 months till our writing this report.

### Discussion

Follicular dendritic cells (FDC), also known as dendritic reticulum cells are the cells of immune system which function in antigen presentation and germinal center regulation.<sup>1,2</sup> Follicular dendritic cell sarcoma (FDCS), first reported by Monda et al in 1986, is an uncommon intermediate grade sarcoma derived from FDC.<sup>4,5</sup>

Histologically a conventional/classical type and inflammatory pseudo tumour type has been recognized. The conventional type is reported in all age groups with equal sex distribution, while the inflammatory pseudotumour like variant shows female predilection.<sup>5,6</sup> One study showed that FDCS could occur even in the first decade, with male predominance. It involves a variety of nodal sites, especially the cervical and axillary. The extra nodal sites (>50% cases) include GI tract, retroperitoneum, mesentery, liver, spleen, pancreas, mediastinum, thyroid, pharynx, and tonsils.<sup>5,6</sup>

Both the morphology and immunohistochemistry are critical in the diagnosis of FDCS. The typical morphologic features of FDCS include proliferation of spindly to rounded/ovoid cells forming fascicles or whorls with sprinkling of lymphocytes. The nuclei are oval and exhibit vesicular /granular chromatin, distinct nucleoli and smooth nuclear contours. Tumour cells may form sheets, follicle like structures, trabeculae and

pseudo-vascular spaces as well. More than one growth pattern can be observed in a single tumour and cuffing of lymphocytes around blood vessels is commonly seen. Occasionally multinucleate giant cells may be present. Mitotic rates can be variable and upto 10 mitoses/10hpf can be seen. FDCS have a broad morphologic pattern overlapping with ectopic meningioma, myoepithelial tumours, inflammatory myofibroblastic tumours, thymoma and gastrointestinal stromal tumour, while osteosarcoma like pattern has been described in one study.<sup>7,8</sup> All these tumours have unique histological features and have characteristic Immunoprofile.

Post radiation morphologic changes in FDCS include nuclear pleomorphism, with nuclear grooving, pseudo-inclusions along with sheets of foamy histiocytes with surrounding fibrous septa. It should be noted that in inflammatory pseudotumour like variant (which selectively occurs in liver, spleen and a single case reported in colon), the tumour cells are dispersed among prominent lymphoplasmacytic cells. It has female predominance, strong association with Epstein Barr Virus (EBV) and indolent behaviour as compared to conventional type.

Immunohistochemically, FDCS show strong positivity for CD21, CD23 and CD35 and occasional positivity for S-100, CD68, leukocyte common antigen and muscle specific actin. They also frequently express vimentin, desmoplakin, human leukocyte antigen-DR (HLA-DR) and epithelial membrane antigen (EMA). FDCS lacks the expression of CD1a, desmin, CD45, cytokeratin and vascular markers.<sup>9</sup> In our case, tumour cells showed strong positivity for CD21 and CD23 while S-100 and CD68 were focally positive. CD117, DOG1, CD1a, and ALK were negative, hence helping us to exclude gastrointestinal stromal tumour, Langerhans cell tumours and lymphoid neoplasms.

FDCS involving lymph nodes, patients usually presents with a well circumscribed painless mass or can be asymptomatic in abdominal FDCS.<sup>9</sup> The nonspecific constitutional symptoms include low grade fever, abdominal fullness and weight loss. On CT scan, abdominal FDCS can be single or multiple, having ovoid, lobulated or irregular shape with well defined or ill defined margins. Necrosis and focal areas of calcification can be seen and tumour may invade surrounding structures, with or without regional lymphadenopathy.<sup>9,10</sup> Abdominal FDCS have larger size than FDCS at other sites with an average size of 10.2 cm (range 3-22cm).<sup>11</sup>

Aetiology is unclear, however there is an association

with Castleman's disease, suggesting hyperplasia, dysplasia and neoplasia sequence with malignant transformation. FDCS (inflammatory pseudotumour like variant) shows strong association with Epstein-Barr Virus (EBV), which may be due to the expression of CD21. Through CD 21 these cells can be experimentally infected by EBV. The role of p53 and LMP-1 (latent membrane protein, a gene of EBV) in the transformation of FDCS has also been proposed.<sup>11,12</sup> However additional studies will be required to better define their relationship with FDCS.

There is variation in therapeutic options for FDCS; however, complete surgical excision is almost always included. Only surgical treatment was opted for our patient and was found free of recurrence after five months. The role of adjuvant chemotherapy and radiotherapy in improving the survival is not clearly demonstrated, as metastasis may occur even after postoperative radiotherapy, but adjuvant therapy should be considered for tumours having high-grade histologic features or intra-abdominal location. According to Soriano et al, those patients who were treated with surgical excision along with adjuvant chemo and radiotherapy had longer disease free interval.<sup>13</sup> Spontaneous regression of FDCS of lung has also been reported in the literature.<sup>14,15</sup>

It is established that the epidermal growth factor receptor (EGFR) is expressed in a significant number of FDC sarcoma, which can be demonstrated by Immunohistochemistry. There is possible up regulation of EGFR in FDC. These are strongly associated with Castleman's disease. These findings identify a target for possible therapy in un-resectable or refractory cases. This has not been widely used.<sup>16</sup> Role of chemotherapy especially in relapse is questionable.

**Disclaimer:** None to declare.

**Conflict of Interest:** None to declare.

**Funding Disclosure:** None to declare.

## References

1. Whang H, Su Z, Zhongliang, Liu B. Follicular dendritic cell sarcoma: a report of six cases and a review of the Chinese literature. *Diagn Pathol* 2010; 5: 67.
2. Chan JK, Fletcher CD, Nayler SJ, Cooper K. Follicular dendritic cell sarcoma: Clinicopathologic analysis of 17 cases suggesting a malignant potential higher than currently recognized. *Cancer* 1997; 79: 294-313.
3. Chan JKC, Pileri SA, Delsol G, Fletcher CDM, Weiss LM, Grogg KL. Follicular dendritic cell sarcoma. In: Swerdlow SH, Campo E, Harris NL, eds. *WHO classification of tumours of haematopoietic and lymphoid tissues*. Lyon: IARC Press, 2008; 363-4.
4. Pan ST, Cheng CY, Lee NS, Liang PI, Chuang SS. Follicular dendritic

- cell sarcoma of the inflammatory pseudotumour like variant presenting as a colonic polyp. *Korean J Pathol* 2014; 48: 140-5.
5. Monda L, Warnke R, Rosai J. A primary lymph node malignancy with features suggestive of dendritic reticulum cell differentiation, a report of 4 cases. *Am J Pathol* 1986; 122: 562-72
  6. Shaw D, Cuisin R, Ito H. Follicular dendritic cell sarcoma of the stomach, case report and review of literature. *Curr Oncol* 2014; 21: 775-8.
  7. Li Z, Jin K, Yu X, Teng X, Zhou H, Wang Y, et al. Extranodal follicular dendritic cell sarcoma in mesentery, a case report. *Oncol Lett* 2011; 2: 649-52.
  8. Li L, Shi YH, Guo ZJ, Qiu T, Guo L, Yang HY, et al. Clinicopathological features and prognosis assessment of extra nodal follicular dendritic cell sarcoma. *World J Gastroenterol* 2010; 16: 2504-19
  9. Han JH, Kim SH, Noh SH, Lee YC, Kim HG, Yang W. Follicular dendritic cell sarcoma presenting as submucosal tumour of the stomach. *Arch Pathol Lab Med* 2000; 124: 1693-6.
  10. Li J, Geng ZJ, Xie CM, Zhang XK, Chen RY, Cai PQ, et al. Computer tomography imaging findings of abdominal follicular dendritic cell sarcoma, a report of 5 cases. *Medicine (Baltimore)* 2016; 95: e2404.
  11. Kang TW, Lee SJ, Song HJ. Follicular dendritic cell sarcoma of the abdomen: the imaging findings. *Korean J Radiol* 2010; 11: 239-43
  12. Wang RF, Han W, Qi L, Shan LH, Wang ZC, Wang LF, et al. Extranodal follicular dendritic cell sarcoma: a clinicopathological report of four cases and a literature review. *Oncol Lett* 2014; 9: 391-8
  13. Chan AC, Chan KW, Chan JK, Au WY, Ho WK, Ng WM. Development of follicular dendritic cell sarcoma in hyaline vascular Castleman's disease of the nasopharynx, tracing its evolution by sequential biopsies. *Histopathology* 2001; 38: 510-8
  14. Soriano AO, Thompson MA, Admirand JH, Fayad LE, Rodriguez AM, Romaguera JE et al. Follicular dendritic cell sarcoma, a report of 14 cases and a review of the literature. *Am J Hematol* 2007; 82: 725-8
  15. Caces DB, Daniel S, Paredes-Tejada JM, Smith S. Spontaneous regression of follicular dendritic cell sarcoma. *J Clin Oncol* 2012; 30: e24-6.
  16. Sun X1, Chang KC, Abruzzo LV, Lai R, Younes A, Jones D. Epidermal growth factor receptor expression in follicular dendritic cells: a shared feature of follicular dendritic cells sarcoma and Castleman's disease. *Hum Pathol* 2003; 34: 835-40.
-