CASE REPORT

Inflammatory pseudotumour-like follicular dendritic cell tumour of the spleen

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SUMMARY

We describe an unusual case of a 73-year-old woman presenting with a solitary splenic mass 8 cm in diameter and an elevation of serum soluble interleukin-2 receptor level. The preoperative diagnosis was primary malignant lymphoma of the spleen. Splenectomy was conducted. Histological analysis confirmed an inflammatory pseudotumour-like follicular dendritic cell tumour that showed different clinicopathological features from those of the classic follicular dendritic cell tumour. Only 33 cases of inflammatory pseudotumour-like follicular dendritic cell tumour have so far been reported. We discuss the incidence, presentation and management of this rare disease.

BACKGROUND

A follicular dendritic cell (FDC) tumour is an extremely uncommon neoplasm of antigen-presenting cells of the B-cell follicles in lymph nodes or extranodal sites. An inflammatory pseudotumour (IPT)-like FDC tumour is considered a separate entity that differs from conventional FDC tumours. IPT-like FDC tumours have been found only in the liver and the spleen, and are associated with Epstein-Barr virus (EBV) infection. There have been only 33 reports (13 cases in the liver, 19 cases in the spleen and a case at the peripancreatic site) of IPT-like FDC tumours in the literature. Appropriate immunostaining for FDC differentiation and EBV infection should help in their recognition.

We report a case of an IPT-like FDC tumour of the spleen and review the literature.

CASE PRESENTATION

A 73-year-old Japanese woman was referred for evaluation of a splenic mass that had been detected during her medical check-up. She did not have any clinical symptoms such as fever, appetite loss, weight loss or abdominal pain. The initial physical examination revealed nothing of note. In terms of medical history, she had had an episode of bronchial asthma but had taken no medication.

INVESTIGATIONS

Laboratory data values were all normal, except for an elevated serum level of soluble interleukin-2 receptor (sIL-2R), which was 2276 U/mL (normal range 190–650 U/mL). Abdominal ultrasound demonstrated a round heterogeneous 8 cm lesion in the spleen (figure 1). Abdominal CT showed an isodensity mass in the spleen. Contrast-enhanced CT confirmed a splenic low-density and delayed-enhanced mass with non-enhancing components in the tumour, which

were regarded as central necrosis (figure 2). MRI revealed that the tumour was isointense on T1 and low-intense with high-intense central area on T2-weighted images, and diffusely vascularised after injection of gadolinium diethyltriamine pentaacetic acid (figure 3). No other relevant abnormalities or lymphadenomegaly were found. Gallium scintigraphy showed no abnormal accumulation.

DIFFERENTIAL DIAGNOSIS

The radiological findings indicated the presence of a splenic neoplasm. The preoperative diagnosis was primary malignant lymphoma of the spleen, because of the solitary intrasplenic tumour associated with a high serum level of sIL-2R, which is often elevated in patients with malignant lymphoma. Although Gallium scintigraphy did not show abnormal accumulation in the spleen, MRI was also identical to the findings in the typical malignant lymphoma.

TREATMENT

Splenectomy was conducted to excise the localised disease completely. Convalescence was uneventful.

OUTCOME AND FOLLOW-UP

The elevated serum level of sIL-2R was normalised after splenectomy from 2276 to 160 U/mL.

On a gross specimen, the tumour, 8 cm in diameter with fibrous capsule, was well demarcated from the surrounding parenchyma. The cut surface was tan in colour and was interspersed with small haemorrhage and yellowish necrosis. There were

Figure 1 Abdominal ultrasound demonstrating a solitary round heterogeneous hypoechoic 8 cm mass in the spleen.

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Figure 2 Axial-CT demonstrating an isodensity mass in the spleen (A). Contrast-enhanced CT confirmed a splenic low-density and delayed-enhanced mass with non-enhancing components within the tumour (B).

no remarkable abnormalities in the uninvolved areas of the spleen (figure 4).

Microscopically, the tumour was composed of spindle cells with mild cellular atypia, and admixed with plasma cells and small lymphocytes of which the population was predominantly of T-cell (CD45RO+, CD3+, CD8+) origin. Occasional scattered multinucleated tumour cells were seen (figure 5A, B), and mitotic rate was 1 per high-power field. No coagulative necrosis was identified. The tumour cells expressed FDC markers of CD21, CD23, CNA.42 and fascin by immunohistochemistry (IHC). This lesion was also positive for EBV-encoded RNA (EBER) as examined by in situ hybridisation (ISH; figure 5C).

The tumour cells were positive in double staining for CNA.42-IHC and EBER-ISH (figure 5D).

Therefore, the final pathology was IPT-like FDC tumour of the spleen with low-grade histological features.

The patient is in excellent health with no evidence of recurrence 12 years after surgery without any chemotherapy.

DISCUSSION

An FDC tumour is an extremely rare neoplasm and was first described in 1986.¹ Since then, approximately 200 cases have been reported. FDC tumours can arise in lymph nodes or extra-nodal sites and express FDC markers such as CD21/CD35, CD23 and CNA.42.² FDC tumours mainly affect middle-aged patients with no gender predilection. Although FDC tumours were considered indolent tumours, recent reports have shown that intra-abdominal cases can exhibit aggressive clinical courses.³ Among intra-abdominal FDC tumours, those in the liver and the spleen demonstrated IPT-like morphology and contained clonal EBV genomes.^{4 5}

The term IPT-like FDC tumour has recently been proposed as a distinctive variant that differs in clinicopathological aspects from conventional FDC tumours. The reports of IPT-like FDC tumours included 13 cases in the liver, 18 cases in the spleen, and a case in the peripancreatic site and were summarised in the table 1.^{5–14}

There is female predominance, selective localisation in the liver and the spleen, frequent presence of systemic symptoms, indolent behaviour, dispersed distribution of tumour cells, prominent lymph-plasmacytic infiltration and consistent association with EBV. It is known that CD21 is a receptor for EBV and that EBV can infect and transform FDC.⁶ Further investigation is needed to understand the role of the EBV in the pathogenesis of this tumour. Large tumour size (>6 cm), intra-abdominal location, high mitotic count (>5 per 10 high-power fields), presence of coagulative necrosis and significant cellular atypia were reported to associate with unfavourable outcome.³ In our case, typical low-grade histological features may have led to a better outcome.

IPT-like FDC tumours were characterised by low-density on CT, and low-intensity on T2-weighted, isointensity and delayed enhancement on T1-weighted MRI. These radiological findings were thought to be caused by typical dense fibrotic stroma in IPT-like FDC tumours. CT and MRI findings of our case were consistent with those in previous reports.⁸ The differential diagnosis includes more common splenic tumours such as cavernous

Figure 3 MRI showing an isointense mass on T1-weighted (A) and a low-intense mass on T2-weighted (B) images with hyperintensity in the centre on the lesion, and diffusely vascularising after injection of gadolinium diethylenetriamine pentaacetic acid (C).

Figure 4 The tumour, 8 cm in diameter, with fibrous capsule was well demarcated from the surrounding parenchyma. The cut surface was tan in colour and interspersed typically with irregular patchy haemorrhage and yellowish necrotic areas.

haemangioma, lymphangioma, metastasis, hamartoma and lymphoma. Cavernous haemangioma, lymphangioma and hamartoma tend to show high intensity on T2-weighted

Table 1 Clinical features of inflammatory pseudotumour-like follicular dendritic cell tumours in the reported cases

Site	Spleen 18; liver 13; peripancreatic 1
M:F	8:24
Age	54.5 (19–78)
Symptoms	Asymptomatic 14 Symptomatic 18 Abdominal pain, fullness 13 Malaise, fever, weight loss 8
Size (cm)	9.1 (2.7–22)
Treatment	Resection 31
Outcome	Recurrence after hepatic resection 3 (alive at 56 and 108 months, died at 95 months) Synchronous metastasis to the liver and spleen (alive at 27 months after splenectomy)
Mean survival (months)	37.4 (median 30)

images.⁸ Therefore, these lesions may be excluded by MRI. In terms of radiological findings, the IPT-like FDC tumour mimics metastasis and lymphoma, so it is difficult to differentiate from each other preoperatively.

Most patients were managed by resection of the tumour. The role of adjuvant therapy has not been well defined.¹⁰ Three cases of hepatic recurrence and a case of synchronous metastasis in the liver and the spleen were reported. Long survival of more than 5 years after recurrence supports the fact that the IPT-like FDC tumour has a neoplastic nature of low-grade malignancy.⁵

Elevation of serum sIL-2R level of more than 2000 U/mL suggested the existence of splenic malignant lymphoma with poor prognosis, however, EBV nuclear antigen-1 enhanced the expression of IL-2R α chain.¹⁵ In our case, EBV was specifically detected in IPT-like FDC tumour cells and the sIL-2R level was decreased after splenectomy. Therefore, EBV in IPT-like FDC tumours may have increased the sIL-2R level. It is suggested

Figure 5 The tumour was composed of spindle cells admixed with plasma cells and small lymphocytes (A and B). The tumour cells expressed follicular dendritic cell markers (CD21, CD23, CNA.42 and fascin). This lesion was positive for Epstein-Barr virus-encoded RNA (EBER) (C), and positive in double staining for CNA.42-immunohistochemistry and EBER-in situ hybridisation (D).

that the EBV-positive spindle cells could have formed the lesion as EBV-related neoplasms and increased the sIL-2R level. A high level of sIL-2R may be a clue for the diagnosis of IPT-like FDC tumours.

In conclusion, appropriate immunostaining for FDC differentiation and EBV infection are mandatory for a definitive diagnosis of IPT-like FDC tumours. Although the incidence of IPT-like FDC tumours may have been underestimated so far, the possibility has to be considered seriously for IPT-like lesions in the liver and the spleen.

Learning points

- ▶ An inflammatory pseudotumour (IPT)-like follicular dendritic cell (FDC) tumour is considered a separate entity with different clinicopathological aspects from conventional FDC tumours.
- ▶ IPT-like FDC tumours have been found only in the liver and the spleen and their diagnosis requires immunostaining for FDC markers and EBV infection.
- ▶ Level of sIL-2R may be a clue for the diagnosis of IPT-like FDC tumours.

Contributors RN managed this case and collected data. SB used immunostaining examination and analysed the specimens. YW and HM managed this case.

Competing interests None.

Patient consent Obtained.

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