Rare disease

Primary orbital non-Hodgkin's lymphoma

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Summary

Non-Hodgkin's lymphoma (NHL) can have extra-nodal presentation in approximately 25% of cases unlike Hodgkin's lymphoma which rarely involves extra-nodal sites. Extra-nodal lymphoma in the head and neck region is extremely rare. We report a case of 6-year-old girl who presented with medial canthus mass with proptosis, lagophthalmos and no significant loss of vision. CT findings showed an extra-conal homogenous mass lesion in the left orbit along superior and medial orbital wall with extensive destruction of surrounding tissue. Histological sections showed polymorphous population of atypical lymphoid cells accompanied by plasma cells, eosinophils and proliferation of small blood vessels with plump endothelial cells. A diagnosis of NHL was rendered. Further, immunohistochemistry confirmed the lesion as peripheral T-cell lymphoma. The lesion was aggressive in course and the patient succumbed within one-and-half months of diagnosis.

BACKGROUND

Lymphomas are malignant neoplasms of the lymphocyte cell lines. They mainly involve lymph nodes, spleen and other non-haemopoietic tissues. Lymphoproliferative disease in the orbit has diverse clinical manifestation. The most substantial clinical issue is to recognise the lymphoproliferative disease and differentiate it from other orbital inflammatory lesions. Initially the two diseases may have common disease manifestation including imaging studies.¹ Orbital lymphomas represent 8–10% of all extra-nodal NHL, and only 1% of all lymphomas.^{2–4} Primary orbital peripheral T-cell lymphoma is an exceedingly rare neoplastic disorder.⁵ Orbital lymphoma presents as slowly enlarging lesions arising from the eyelid, orbit, lacrimal gland or conjunctiva.⁶

CASE PRESENTATION

A 6-year-old child presented with complaints of gradually progressive proptosis and lagophthalmos (figure 1) for 3 months associated with fever for 15 days. There was no significant loss of vision. Ophthalmological examination disclosed a left orbital mass, developing outside the eye displacing the globe inferolaterally. Uncorrected visual acuity was 6/12 in both eyes. No organomegaly or lymphadenopathy was present. The family history was non-contributory.

Orbital CT scan disclosed a large left orbital extra-conal homogenous mass along superior and medial orbital wall measuring 33×18×30 mm without evidence of any bone destruction. There was marked displacement of globe inferolaterally along with dehiscence of inferior wall of the bony orbit. The right orbit and both the globes were otherwise, normal.

In view of orbital mass lesion, a CT-guided biopsy measuring 0.75×0.5 cm was taken. The microscopic examination of the tissue showed polymorphous population of cells consisting of dense lympho-histiocytic infiltrate harbouring atypical lymphocytes. The atypical cells were small to medium in size, having high

nucleo-cytoplasmic ratio, irregular cleaved nuclear contours, condensed chromatin and scant cytoplasm (figure 2). These cells were accompanied by plasma cells, eosinophils and conspicuous proliferation of small vascular channels with plump endothelial cells and frequent mitotic figures. A diagnosis of non-Hodgkin's lymphoma (NHL) was rendered and immunohistochemistry was performed for exact typing of the tumour.

Immunohistochemical stains for LCA (leucocyte common antigen) (CD45), CD45RO, CD3 were positive (figure 3), suggesting a lymphoid neoplasm of T-cell origin. The neoplastic cells were negative for CD15, CD30, CD20, CD56 and EMA. These findings were consistent with peripheral T-cell lymphoma.

A complete systemic evaluation to rule out metastatic lymphoma to the orbit included CT of the chest, abdomen and pelvis as well as renal and liver function tests. A complete haematological examination with blood

Figure 1 Photograph of the patient with left orbital mass producing proptosis and exophthalmos.

Figure 2 Histopathological section showing a tumour composed of polymorphous infiltrate comprising predominantly atypical lymphoid cells admixed with inflammatory cells set against a background of small vascular channels (H&E, $\times 400$). Inset shows atypical cells having high nucleo-cytoplasmic ratio, vesicular to hyperchromatic nuclei and irregular nuclear contours (H&E, $\times 1000$).

count and bone marrow aspiration was also done. There was no evidence of any lymphoproliferative disease or abnormality elsewhere.

Thus, on the basis of histomorphology, immunophenotyping and a thorough systemic evaluation, a diagnosis of primary orbital peripheral T-cell lymphoma was established. Radiotherapy was delivered to the site and the patient also received a cycle of chemotherapy with vincristine and adriamycin. However, the patient eventually succumbed to rapid progression of disease within one-and-half months of diagnosis.

OUTCOME AND FOLLOW-UP

The patient underwent a radiotherapy and cycle of chemotherapy with vincristine and adriamycin but, eventually succumbed to the disease within one-and-half months of diagnosis.

DISCUSSION

Primary NHL of the orbit is a rare presentation, representing 8–10% of extra-nodal NHL² and only 1% of all NHL.³ Orbital lymphoma, in contrast to ocular lymphomas, are rarely associated with primary central nervous system lymphoma.⁴ Majority of orbital lymphomas are of low-grade variety (84%) and only 16% are of high-grade histology.^{4–7} On the basis of published data from multiple large clinical series, most orbital lympho-proliferative disorders can be categorised as (1) peripheral extra-nodal B-cell non-Hodgkin's malignant lymphoma, (2) atypical lymphoid hyperplasia or (3) benign reactive lymphoid hyperplasia.⁵

Orbital lymphomas are predominantly of mucosa-associated lymphoid tissue (MALT) histology (57%), but they also include other histological subtypes, such as follicular lymphomas (19%), diffuse large B-cell lymphomas (DLCL) and mantle-cell lymphomas.^{4–8} According to REAL, the commonest subtype of lymphoma originating in the orbit is the extra-nodal marginal zone lymphoma of B-cell origin (MZL). When encountered in relation to an epithelial surface or glandular organ, it is thought to originate from MALT tissue. With the exception of lacrimal gland Sjogren's syndrome, no preceding orbital inflammatory condition or infectious agent has been described.⁶ The remainder of low-grade lymphoma of the orbit are those types commonly encountered as nodal primaries; follicular lymphoma, small B-lymphocytic lymphoma and rarely mantle-cell lymphoma. DLCL is the commonest high-grade type.⁶

T-cell lymphoma are much less common than B-cell lymphoma and are particularly rare in the ocular region.⁹ Of the few reported cases of ophthalmic T-cell lymphomas, most involved the orbit or eyelid, and followed known systemic T-cell lymphoma.⁹ Primary orbital T-cell lymphoma are exceedingly rare neoplastic disorder with only few cases reported in the literature.^{1–5,9} In 1999, Coupland *et al*¹⁰ described the first case of primary T-cell lymphoma confirmed both immunophenotypically and genotypically.

The median age of patients with peripheral T-cell lymphoma has ranged from 51 to 68 years in various studies.¹¹ This paper describes a case of primary orbital peripheral T-cell lymphoma in a 6-year-old girl, a very

Figure 3 Leucocyte common antigen (CD45) and CD3 immunostain decorating the tumour cells.

unusual occurrence at this age. Leidenix *et al*¹² reported a case of primary T-cell lymphoma confined to the orbit in a paediatric patient. The patient received surgical excision, systemic chemotherapy and local radiation and died of dissemination of disease. Hassan and Elner¹³ discovered orbital peripheral T-cell lymphoma in a child who responded to aggressive treatment with local radiation and systemic chemotherapy.

The diagnosis of primary orbital adnexal T-cell lymphoma is approached with caution, as the eye and orbit harbour no native lymphoid tissue.⁵ At the time of diagnosis peripheral lymphadenopathy is common and visceral involvement is unusual. Patients with peripheral T-cell lymphoma, rarely present with clinical picture of leukaemia. In 14–50% cases bone marrow involvement may be encountered.¹¹ Involvement of the orbit in T-cell lymphoma is commonly associated with a previously recognised systemic disease. More rarely these lesions may have an initial systemic presentation as an orbital mass or may be limited to the orbit. Those orbital involvement include exophthalmos, a smooth or ulcerating conjunctival mass, lid oedema, chemosis or pain.⁹

The study by Coupland *et al*¹⁰ shows the heterogenous nature of T-cell lymphoma involving the ocular and ocular adnexal tissue and a varied associated prognosis.^{10 14} Rapid progression through days to weeks, and poor systemic prognosis was a common feature.⁹ T-cell lymphoma is generally rapidly progressive and likely to have a high mortality despite aggressive treatment.¹ The overall survival has ranged from 25% to 45% in various studies.¹¹

Learning points

- ▶ Peripheral T-cell lymphoma in the orbit can present as a primary lesion and take an aggressive clinical course.
- ▶ The diagnosis should be regarded as one of the differential diagnoses of lymphoma.
- ▶ The diagnosis relies on clinic-pathological and immunohistochemical findings.

Competing interest None.

Patient consent Obtained.

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