Plasmablastic lymphoma in childhood: A report of two cases

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Plasmablastic lymphoma is an aggressive non-Hodgkin lymphoma predominantly seen in adult patients. Only eight cases of plasmablastic lymphoma in children have been published to date. In this report, we present an additional two cases. The first patient was a 9-year-old girl presenting with a nasal mass, while the second was a 15-year-old girl with swelling of the right side of the face and proptosis. Both patients were HIV-positive.

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Plasmablastic lymphoma is a non-Hodgkin lymphoma (NHL) predominantly seen in HIV-infected patients.[1,2] The majority of patients are adults and only isolated cases have been reported in children.[2] We describe two additional cases of plasmablastic lymphoma in paediatric patients. Approval to report these cases was obtained from the Ethics Committee of the Faculty of Health Sciences, University of the Free State, Bloemfontein, South Africa (ECUFS No. 06/2013).

Case 1

A 9-year-old girl presented with a progressively enlarging mass in the right nasal passage. She was known to be HIV-positive with an absolute $CD4^+$ count of 252×10^6 cells/l. An incision biopsy was performed which showed sheets of large atypical cells with a plasmacytoid appearance and numerous apoptotic bodies. Immunohistochemical stains for LCA, CD3, CD20, PAX5 and CD30 were negative, while stains for CD138 and MUM1 were positive. A diagnosis of plasmablastic lymphoma was made.

On further examination she was found to have stage 4 disease with bone marrow infiltration. She was treated with the LMB protocol (prednisone, vincristine, methotrexate, cyclophosphamide, adriamycin and arabinoside, as well as six intrathecal doses of methotrexate or arabinoside and hydrocortisone). Highly active antiretroviral therapy (HAART) was initiated.

Eight months after completion of the LMB protocol, she developed a local relapse in the nose which was fully resected. She then received 3D conformal radiation in 180 cGy fractions up to a total dose of 3 960 cGy. Thirty-eight months after the initial diagnosis, she developed a mass in the right breast and a biopsy again showed features consistent with a plasmablastic lymphoma. She was given one cycle of ifosfamide, etoposide and carboplatin (ICE), but died unexpectedly one month later from an upper gastrointestinal tract haemorrhage.

Case 2

A 15-year-old girl presented with a 1-month history of painless swelling of the right side of the face with proptosis. A computed tomography scan showed an expansile lesion in the right maxillary sinus extending into the ethmoid and sphenoid sinuses and involving the medial part of the right orbit. Bilateral submandibular and submental lymphadenopathy were also evident. She was HIV-positive with an absolute $CD4^+$ count of 228×10^6 cells/l. A biopsy of the maxillary lesion showed large tumour cells with eccentric nuclei interspersed by tingible body macrophages, giving the tumour a starry sky appearance.

Immunohistochemical stains for CD138 and MUM1 were strongly positive, while stains for LCA, CD20, PAX5, CD3 and CD30 were negative. A diagnosis of plasmablastic lymphoma was made. She was given one cycle of endoxan, doxorubicin, oncovin and prednisone (CHOP) and was also started on HAART. Her $CD4^+$ count dropped to 95×10^6 cells/l and in light of this decrease, the chemotherapy regime was changed to cyclophosphamide, doxorubicin and VP16 (CDE). She received five cycles of CDE. She was seen 13 months after the initial diagnosis, at which time she was in remission. She was then lost to follow-up; on contacting the family, they stated that she had died 1 month after her last visit to oncology, and they were uncertain of the cause of death.

Discussion

Lymphomas are the third-most common group of childhood malignancies and constitute about 10% of childhood cancers.[3,4] Approximately 45% of cases are NHLs.[4] Approximately 90% of NHLs are comprised of mature B-cell NHLs, lymphoblastic lymphomas and anaplastic lymphomas.[3] Plasmablastic lymphoma was originally described in 1997 as a variant of diffuse large B-cell lymphoma seen in the oral cavity in HIV-positive patients.[5] Subsequently, plasmablastic lymphoma has been found to involve other sites and to occur in other immunodeficiency states and in elderly patients.[1,2] Most patients are adults with a male predominance.[2,6] A literature review identified only eight cases of plasmablastic lymphoma in paediatric patients,[7-11] which are summarised in Table 1. Six of these children were HIV-positive and five were female.

The $CD4^+$ count was low in both of our patients (252×10^6 cells/l and 228×10^6 cells/l, respectively) and neither was receiving HAART before being diagnosed with plasmablastic lymphoma. Of the other four reported cases with available $CD4^+$ counts, only one had a $CD4^+$ count $>500\times10^6$ cells/l and this patient was receiving HAART before the diagnosis of lymphoma was made.[11]

Castillo *et al.*[12] reviewed 53 HIV-positive adult patients with plasmablastic lymphoma. The median progression-free survival was 6 months and the median overall survival was 11 months. They determined that HIV-positive patients with plasmablastic lymphoma

Table 1. Clinical features of paediatric patients with plasmablastic lymphoma

Reference	Age (years)	Gender	Location	HIV status	$CD4^+$ count ($\times 10^6$ cells/l)	Outcome
Case 1	9	F	Nose	Positive	252	Deceased (39 months)
Case 2	15	F	Maxillary sinus	Positive	228	Deceased (14 months)
Colomo *et al.*[7]	11	F	Skin	Positive	Not stated	Not stated
Radhakrishnan *et al.*[8]	7	M	Oral cavity	Positive	Not stated	Not stated
Chabay *et al.*[9]	3	F	Vulva	Positive	285	Alive (15 months)
Gogia and Bakhshi[10]	2	F	Oral cavity	Negative	N/A	Deceased
Hsi *et al.*[1]	12	F	Spine	Negative	N/A	Not stated
Pather *et al.*[11]	11	M	Orbit	Positive	221	Deceased (6 months)
Pather *et al.*[11]	14	M	Orbit, nasal and maxillary region	Positive	237	Deceased (15 months)
Pather *et al.*[11]	9	F	Scalp	Positive	592	Alive (6 months)

F = female; M = male; N/A = not applicable.

have a poor prognosis regardless of the treatment regime utilised. Follow-up data were available in five of the paediatric cases, of which two were alive after 6 months[11] and 15 months,[9] respectively, and three had died[10,11] (Table 1). One of our patients died 39 months after the initial diagnosis following tumour recurrence, while the second died after 14 months. The family was unsure of the cause of death of the latter patient. However, since she had been in remission when seen the previous month, it is suspected that death was most likely unrelated to the lymphoma.

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