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Extra nodal nasal NK/T cell lymphoma in a teen, report of a case

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Abstract: Extra nodal natural killer/T cell lymphoma of nasal type (Nasal NK/T cell lymphoma) is an uncommon type of extra nodal lymphoma. It is extremely rare in childhood. We present the case of a 16 year old boy with nasal NK/T cell lymphoma. He presented with an ulcerated lesion in the hard palate 3x2 cm, with slough and a perforation. A CT scan of the paranasal sinuses revealed an irregular enhancing lesion in the region of hard palate with erosion of the palatine process of both maxilla. Biopsy was diagnostic of NK/T cell lymphoma of nasal type, positive for CD7, CD3, CD56 and granzyme and plasma EBV DNA. PET scan showed FDG avid lesions in nasal cavity regions, peripancreatic region and cervical lymph nodes. He is undergoing chemotherapy with SMILE protocol and is planned for local XRT also.
Keywords: Extra nodal, NK/T cell, Lymphoma, Nasal, Child.

INTRODUCTION

Extra nodal natural killer/T cell lymphoma of nasal type (Nasal NK/T cell lymphoma) is an uncommon type of extra nodal lymphoma, defined as a distinct entity in WHO classification [1]. It shows a peculiar geographic predilection for Asian and native populations of Central and South America where it accounts for 5-15% of all Non Hodgkin's lymphomas [2]. These lymphomas occur commonly in the nasal and upper aero digestive tracts. The median age at presentation is 52 years; however, it is extremely rare in childhood [3]. We present the case of a 16 year old boy with nasal NK cell lymphoma.

CASE REPORT

A 16 year old boy presented with history of nasal block, nasal discharge of 3 months duration and an ulcer over the hard palate noticed 1 month ago. He also had bleeding from the lesion occasionally and irregular fever. On examination an ulcerated lesion was seen in the hard palate 3x2 cm, with slough and a perforation (Figure 1).

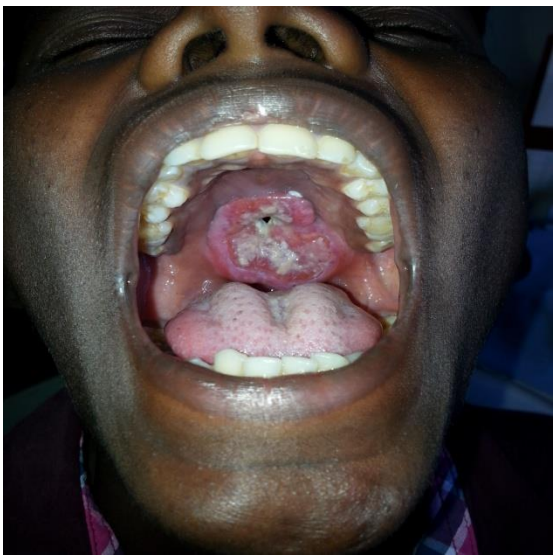

Fig-1: Ulcerated lesion in the hard palate with slough and a perforation

A computed tomographic (CT) scan of the paranasal sinuses revealed an irregular enhancing lesion in the region of hard palate with erosion of the palatine process of both maxillas. Posteriorly the lesion was involving the soft palate and uvula, superiorly the lesion extended to both nasal cavities with erosion of the nasal septum. Lesion also extended to the nasopharynx along the left lateral wall. Multiple bilateral cervical lymph nodes were also present. Mucosal thickening was noted in maxillary, ethmoid and frontal sinuses (Figure 2).

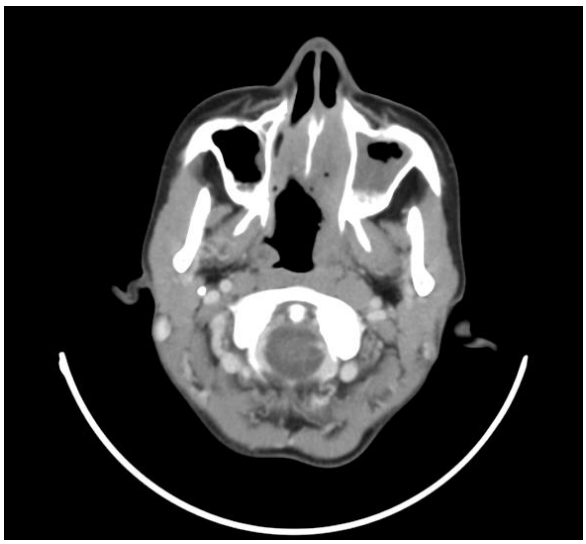

Fig-2: CT scan of the paranasal sinuses axial view showing an irregular enhancing lesion in the region of hard palate with erosion of palatine process of both maxilla and nasal septum

A biopsy was taken from the lesion. Histopathological examination showed tissue lined by ulcerated squamous epithelium. The sub mucosa showed infiltration of atypical lymphoid cells with abundant cytoplasm and vesicular nuclei along with necrotic tissue. On immunohistochemistry, the cells were positive for CD7, CD3, CD56, granzyme, and negative for CD20, CD5, CD34, and TdT with MIB labeling index of 60%. The picture was suggestive of extra nodal NK/T cell lymphoma, nasal type. EBV DNA was detected in the plasma confirming the diagnosis.

His Haemogram, serum chemistries and bone marrow studies were normal. A CT scan of the thorax, abdomen and pelvis were also normal and he was staged clinically as stage II. A Positron emission tomography computed tomography (PET CT) scan showed FDG avid soft tissue thickening involving bilateral nasal cavities with SUV 9.4 suggestive of metabolically active extra nodal lymphomatous deposit (Figure 3). Another FDG avid hypo dense area was noted in the peripancreatic region suggestive of lymphomatous disease. Minimal FDG avidity was also noted in bilateral level 5 cervical lymph nodes and right interlobar lymph node. Rest of lymph nodes were non avid. The PET CT upstaged the patient to stage IV.

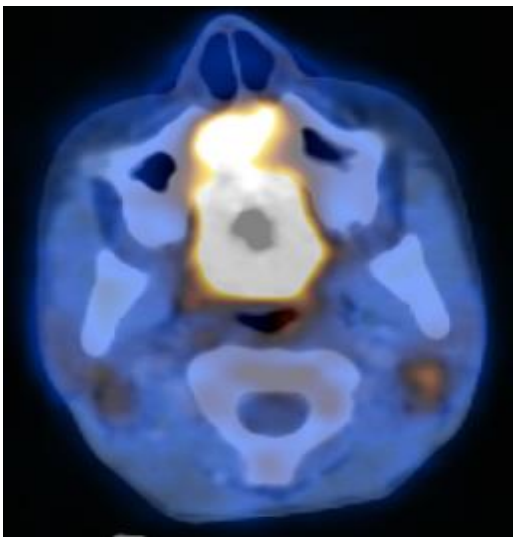

Fig-3: PET CT scan showing the FDG avid lymphomatous deposit involving bilateral nasal cavities

Considering the disseminated nature of the disease, he was started on intensive chemotherapy with SMILE protocol with a plan to sand witch local radiation after 2 cycles. He has completed the first course, his symptoms have subsided and the lesion shows regression (Figure 4).

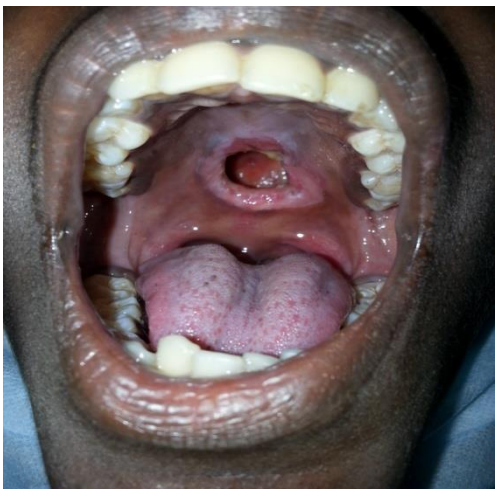

Fig-4: The lesion after the first course of chemotherapy

DISCUSSION

Natural killer (NK)/ T cell malignancies are very aggressive. NK/ T cell lymphomas are almost exclusively extra nodal in location [4]. Three clinical patterns are described- Nasal NK/T cell lymphomas involve the nose, nasopharynx and the upper aero digestive tract [4]. Nonnasal NK/T-cell lymphoma may involve any site, commonly the skin, testes, salivary glands and gastrointestinal tract. The disseminated type is wide spread with lymphadenopathy, hepatosplenomegaly and bone marrow involvement [4,

5]. Nasal NK/T cell lymphomas are usually localized, the initial sites of involvement being nose and nasopharynx and occasionally paranasal sinuses, Waldeyers ring, tonsils and oropharynx. When the nasal lymphomas destroy the floor of the nasal cavity, the characteristic perforation of hard palate is seen. Our patient also had a perforation of hard palate. The median age at presentation is 52 years, with a male preponderance. It is very uncommon in children. Our patient is only 16 years old and hence the rarity.

Patients usually present with symptoms of nasal obstruction, epistaxis, with a destructive mass involving the nose, sinuses or palate [6, 7, 8]. Other extra nodal sites may be involved either primarily (extra nasal NK/T cell lymphoma) or as direct extension of the primary tumor. B symptoms are seen in about 35% cases [9]. Lymph nodes may be involved secondarily and bone marrow is involved in leukemic form. About 3% of extra nodal NK/T cell lymphomas are associated with hemophagocytic syndrome which is often fatal [3]. Our patient also had EBV DNA detected in the plasma.

PET CT scan is useful in staging, as lymphomas are 18-fluorodeoxyglucose avid. Our patient was clinically staged as II, however, PET scans showed lesions in other areas as well and he was upstaged as IV after PET scan. Combined chemotherapy and radiotherapy is the standard approach for the management of extra nodal NK/Tcell lymphoma, nasal type [4, 11, 12]. NK/T cell lymphoma is radiosensitive, and a dose of 50 Gy is recommended. An overall response rate of 77-100% has been reported with radiation alone, however systemic relapse rates were very high [13, 14, 15, 16].

Anthracycline based chemotherapy along with involved field radiotherapy for localized disease has been found to be unsatisfactory with CR rate of 58% and 3 year overall survival of 59%. [17]. Hence CHOP based chemotherapy is not recommended for NK/T cell lymphomas. The NK cells express very high P-glycoprotein and this property of multidrug resistance of such lymphomas result in poor response to anthracycline [18]. Hence non MDR dependent drugs are incorporated in the treatment protocols for NK/T cell lymphomas.

Concurrent chemo radiotherapy has also been tried with 50 Gy radiotherapy and 3 cycles of DeVIC (dexamethasone, etoposide, ifosfamide and carboplatin) which gave a 5 year overall survival of 70% [19]. In another study using VIPD (etoposide, ifosfamide, Cisplatin and dexamethasone,) and concurrent radiotherapy of 40 Gy, the OS at 3 year was 86% [20].

Regimens containing L asparaginase and drugs unaffected by P-glycoprotein are most effective in NK/T cell lymphoma and has been incorporated in recent protocols such as LVP and GELOX which has given an OS at 2 years of 88% and 86% respectively [21,22]. A more intense regimen employed in nasal lymphomas is SMILE (dexamethasone, methotrexate, ifosfamide, L asparaginase and etoposide) which along with sandwiched involved field radiotherapy resulted in durable remission [23]. Our patient in view of the advanced stage was started on SMILE protocol and is showing good response after the first cycle.

Extra nodal NK/T cell lymphoma, nasal type is an aggressive lymphoma .The prognosis with treatment depends on the location and stage of disease and is poor even in those with a low international prognostic index. Over 60 percent of patients with stage I disease remain in long term remission following treatment with radiation therapy with or without chemotherapy, while patients with stage II to IV disease have a worse prognosis with frequent relapses in other extra nodal sites [8, 15, 24].

CONCLUSION

Extra nodal nasal NK/T cell lymphoma is a very rare entity especially in childhood and adolescence. Clinically they present as a destructive mass in the nasal and nasopharyngeal region with characteristic hard palate perforation. The key diagnostic features are the presence of NK cell markers on immuno phenotyping and EBV. Their behavior is aggressive and requires local irradiation as well as multiagent chemotherapy.

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