Osteosarcoma of Ethmoid Sinus in an Infant

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Paranasal sinus is a rare site of involvement by osteogenic sarcoma. Osteogenic sarcoma constitutes 0.5 to 1.0% of all malignant lesions of paranasal sinuses(1). A review of 256 nonepithelial tumors of paranasal sinuses consisted of only 11 cases (4%) of osteogenic sarcoma with their predominant location in maxillary antra. Ethmoid sinus is a rare primary site for osteogenic sarcoma and till today there are only eight well documented cases in the English literature(2-8). The reported case is unusual for its rare site of occurrence in ethmoid sinus and early age of presentation in infancy for a *de novo* osteosarcoma.

Case Report

A one-year-old child, presented with left sided nasal discharge for the last 7 months and proptosis for 2 months. Examination revealed an axial proptosis of left eye with associated nasal mass.

Plain skiagrams were non-contributory and the non-contrast axial CT scan demonstrated a well defined isodense soft tissue mass in the left ethmoid gallary extending on to retrobulbar area through the lateral wall of left ethmoid sinus (*Fig. 1*). No calcification in the mass was evident. Fibrous dysplasia, inflammatory granuloma and rhabdomyosarcoma were considered in the differential diagnosis.

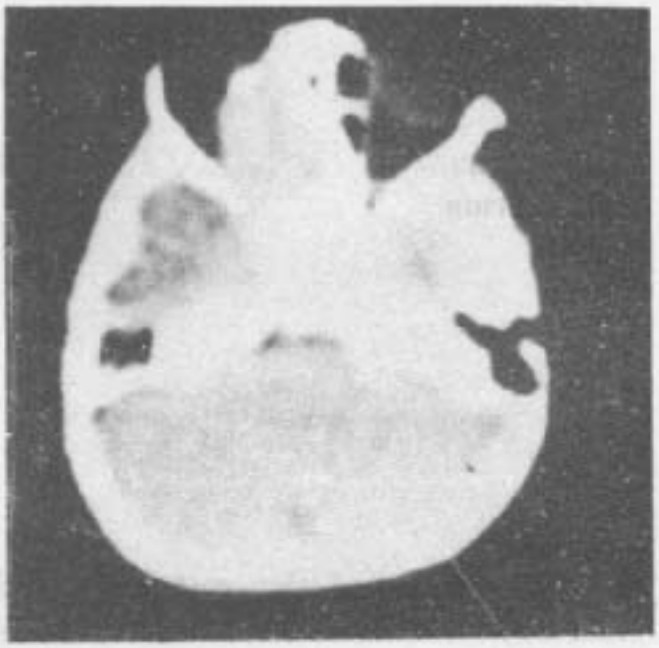

Fig. 1. Axial CT showing soft tissue mass involving left ethmoids with retrobulbar extension.

Chest skiagram was normal. The patient was subjected to ethmiodectomy and partial debulking of solid tumor mass was achieved. The specimen from the solid tumor was sent for microscopy.

Histologically it was highly cellular mass with predominantly spindle shaped cells infiltrating the bone. There were areas of malignant osteoblastic cells with osteoid formation (*Fig. 2*). It was diagnosed as osteogenic sarcoma of ethmoid sinus.

A follow-up chest CT scan which was normal preceded post-operative radical radiotherapy.

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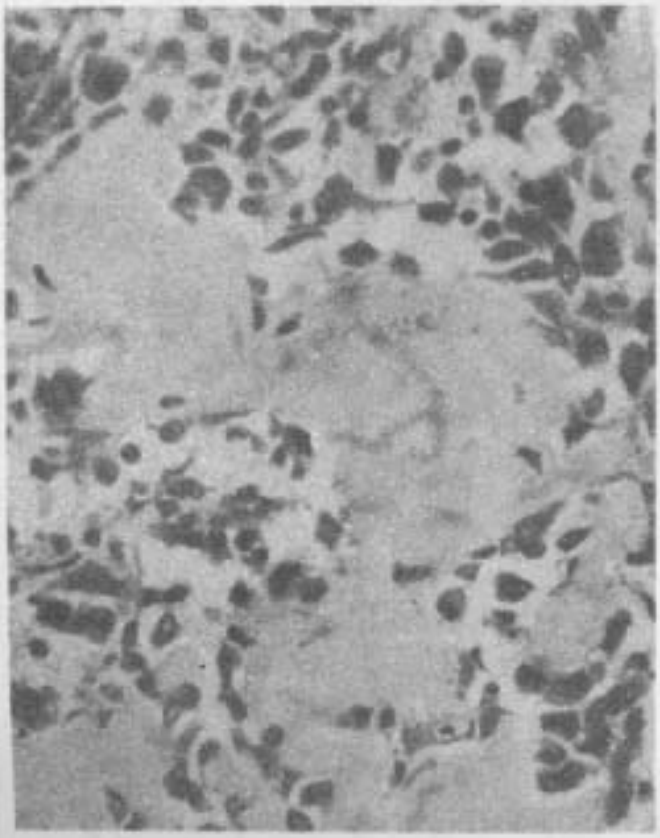

Fig. 2. Biopsy of the mass showing extensive osteoid formation by malignant cells (H & E × 400)

The patient remained well for six months before developing recurrence of proptosis and visual loss with evidence of raised intracranial pressure. Anticdema measures were started and a chest *X*-ray revealed two pulmonary nodules suggestive of deposits. The patient died within few hours following a bout of massive hemoptysis.

Discussion

Primary osteogenic sarcoma is a rare tumor of paranasal sinuses(1,2). Amongst the paranasal sinuses, maxillary antra is the most frequent site of involvement. More than 100 cases of osteogenic sarcoma of maxilla are reported in the literature while there are only eight documented cases in which ethmoid sinus is the primary site of involvement (*Table*). Majority of cases of osteosarcoma of paranasal sinuses are idiopathic but known etiological factors include Paget's disease, fibrous dysplasia and previous irradiation.

A look at the *Table* supports a well recognized association of radiation exposure and osteogenic sarcoma of bone but this usually follows a period of many months to years(8). There is no evidence to indicate that this reported infant had received radiotherapy for any cause whatsoever and this was considered to be idiopathic osteogenic sarcoma of ethmoid sinus.

In general, osteogenic sarcoma of paranasal sinuses and facial bones tend to occur a decade later as compared to long bones, with maximum incidence in the *3rd decade*. These lesions usually present with non-specific symptoms of a mass or swelling, pain, nasal obstruction; epistaxis and eye symptoms in that order with an average duration of symptoms being 1-12 months(1). Radiologically most of antral and ethmoidal osteosarcomas will present as a soft tissue mass with or without bone destruction(6). CT scan in axial and coronal planes provides the exact extent of the mass including intracranial extension. Presence of abnormal calcification or ossification strongly favors the diagnosis of osteogenic sarcoma. However, a carcinoma, chondrosarcoma, fibrous dysplasia, giant cell granuloma and ossifying fibroma must be considered in the differential diagnosis. In infants, rhabdomyosarcoma is another differential possibility. Only histology provides the final answer.

These tumors seem to have a lower incidence of distant metastases but usually demonstrate extensive local invasion. Radical surgery is usually not possible because of their location and most of these *patients*

TABLE–*Reported Cases of Ethmoid Osteosarcoma*

	Authors	Year	Age &	Sex	Whether irradiated or not	Interval between irradiation and diagnosis of osteosarcoma in years	Treatment	Recurrence	Survival after diagnosis
1.	Cahan *et al.*(3)	1948	6	F	Yes, Retinoblastoma (25000 r in 2 yrs)	6-7	Surgery	Yes	7 mo
2.	Tabet and Vickery(4)	1952	9	F	Yes (19800 r in 11 mths)	6-7	Surgery	Yes	4 mo
3.	Skollnik *et al.*(5)	1956	11	M	Yes	7	–	–	Not mentioned
4.	Kragh and Dahlin *et al*.(6)	1958	23	M	No	–	–	–	3 Yrs
5.	Kragh and Dahlin *et al.*(6)	1958	53	M	No	–	–	–	3 Yr
6.	Fujita *et al.*(7)	1967	NA		No	–	–	–	Not mentioned
7.	Fuy and Perzin(2)	1974	NA		No	–	–	–	19 mo
8.	Bradley *et al.*(8)	1988	45	M	Yes	(Many) Not specified	Surgery	Yes	6 mo

NA = Not available

die within a year. Local invasion can occur into contralateral ethmoid, orbit, nasopharynx and intracranially. Metastases can occur into draining lymph nodes, lungs, brain and other bones. In general, primary osteosarcoma of ethmoids is a rare tumor with poor prognosis. A combined approach using postoperative radiotherapy and adjuvant chemotherapy is likely to improve the survival rates.

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Intraperitoneal Abscess due to Infection with *Salmonella typhimurium*

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Salmonella typhimurium infections are prevalent world-wide and cause disease ranging from a benign self limiting gastroenteritis to generalized and severe infections such as septicemia and meningitis(1). Majority of patients infected by this organism are children. Localized infections with *S. typhimurium* commonly involve organs such as bone, joints, gall bladder and urinary tract. Involvement of peritoneal cavity is a rare occurrence and intraperitoneal abscess has not been often reported. We describe a case of *S. typhimurium* intraperitoneal abscess in an infant following gastrointestinal illness.

Case Report

An eleven-month-old boy was admitted with a history of high grade fever, progressive distension of abdomen, constipation and bilious vomiting of one day duration.

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