NEOPLASTIC DISEASES OF THE HEAD & NECK IN CHILDREN

M. Ashraf,* P. Kumar,** M.Ashraf Reza,*** Ragesh K.P.****

Abstract: Pediatric neoplasm is next only to trauma as the most common cause of death. The cervicofacial malignancies presents a unique challenge owing to potential adverse effects of both the disease process and the treatment employed on critical developing head and neck structures.

This study comprised of 106 children below 12 years age group conducted during 1999-2003 at JNMC, Aligarh. Of 106 cases 70 were benign neoplasms and 36 malignant neoplasms. Nasopharynx was the commonest site of involvement. Nasopharyngeal angiofibroma was the commonest benign tumour and lymphoma was the commonest malignant neoplasm. Team approach is required for mitigation of the disease process.

Keywords: Neoplasm, Nasopharyngeal angiofibroma, Lymphoma, Rhabdomyosarcoma.

INTRODUCTION

Neoplasm ranks second only to trauma as the most common cause of death in children between the age of one to fourteen years (Conley 1970, Robinson et al (1988). Neoplasm could be either benign or malignant. Benign head and neck lesions are also quite common in children. Benign lesions are of differential diagnostic value in that the clinical presentation of these lesions may mimic that of cervicofacial malignancies. Approximately 27% of malignant tumors in childhood occur in the region of the head and neck (Sutow 1964). In another study on pediatric head and neck malignancies Albright J et al (2002) reported an increased incidence of 35% over a period of 23 years. Neoplasms of the head and neck in pediatric population differ significantly from that of adults. In adults epidermoid carcinoma constitutes the great majority of cancer in the head and neck while in children lymphomas and sarcomas are the most common malignancies in the head and neck region (Sutow 1964, jaffe & jaffe 1973, Cunningham et al 1987). Lymphomas are the commonest pediatric head and neck cancer (50%) followed by rhabdomyosarcoma (20%), nasopharyngeal carcinoma, neuroblastoma (6% each), thyroid carcinomas (4%) and a variety of other soft tissue sarcomas and salivary gland tumour (Rapidis et al 1988). Carcinomas are rare in children though almost half of childhood carcinoma occur in head and neck (thyroid & nasopharynx).

Fig 1: A 2yr old boy with rhabdomyosarcoma

Children with cervicofacial malignancies present a unique challenge owing to potential adverse effects of both the disease process and the treatment employed on critical developing head and neck structures. A team approach is essential and overall rarity of many of these malignancies mandates referral to a center that specializes in the management of pediatric cancer.

MATERIAL AND METHODS

This study was conducted from January 1999 to December 2003 on children upto the age of 12 years who attended the out patient Department of Otorhinolaryngology, Jawaharlal Nehru Medical College, Aligarh. In this study we excluded those lesions which were inflammatory in origin. A detailed history and examination with reference to its mode of onset, duration, rate of growth, associated sign and symptoms like epistaxis, nasal obstruction, abnormality of speech and swallowing, airway obstruction, weight loss and fever was noted. Thorough local and systematic examinations were carried out along with relevant hematological, biochemical and radiological examination (including CT scan & MRI). Cytological and histopathological evaluation was done in Department of Pathology JNMCH, AMU, Aligarh. Medical & surgical treatment was planned and given according to final etiological diagnosis.

OBSERVATION

Children upto the age of 12 years were examined. After thorough clinical radiological examination, FNAC and Biopsy

Fig 2 : A 3yr old boy with Warthin's tumour of left parotid gland

* Senior Resident, ** Reader, ***- Resident, **** Ex-Resident, Dept. of ENT, J.N. Medical College, AMU, Aligarh

Fig 3 : A 1yr old boy with meningoencephalocele

Fig 4 : Photograph of 9 months old girl with haemangioma

Fig 5 : A 11yr old boy with ameloblastic carcinoma

(excisional or punch) was carried out. Diagnosis was ascertained and treatment modality was decided according to the pathology. The maximum number of patient was between 8-12 years of age group (47.16%). Males were more afflicted than females (4.25:1). Average time duration of presentation was 10 months for benign & 5 months for the malignant lesions. Majority of the patients had presented with sore throat and tonsillitis, weight loss, fever, dyspnoea, dysphagia and neck swelling. Proptosis, epistaxis and decreased appetite were other important symptoms. Nineteen patients were asymptomatic. Systematic examination revealed splenomegaly in five patients and cranial nerve palsy in four. FNAC, biopsy (cytological & histopathological) confirmed that majority of the patients were having benign diseases. Inconclusive cases were discarded from the study, which were seven in number.

DISCUSSION

The relative incidence of pediatric head & neck malignant tumours varies with the age. Robinson et al (1988) in his retrospective review of 147 patients from 1970-1988 reported that rhabdomyosarcoma and neuroblastoma were the commonest malignancies in the first two years of life and lymphoma was the commonest neoplasm in the head & neck after the age of 2 years. In a study on rhabdomyosarcoma by Karahas Z et al (2000) in developing countries noted that primary site was head and neck in 31.40% cases with embryonal subtype being the commonest i.e. 80.40%. Malignancies of thyroid gland, nasopharynx & salivary glands present later in the childhood and can initially present as

cervical lymphadenopathy. The most common presentation of a tumour in the head & neck area is a painless enlarging mass in the neck. Moussattos and Baffes (1963) in their study reported that malignant tumours of neck are usually located behind the

the sternocleidomastoid in the posterior triangle except thyroid malignancies. Other symptoms are secondary to mass effect on surrounding structures.

Fig 6 : A 9yr old boy with Hodgkins disease

Presence of prolonged nasal obstruction, recurrent epistaxis or unilateral middle ear effusion can result from malignancies arising from these regions and requires a thorough ear, nose and throat examination. Tumours encroaching on the aerodigestive tract can cause dyspnoea and dysphagia. Horner's syndrome may be associated with cervical or upper mediastinal neuroblastoma. There were two cases of sternocleidomastoid tumor in our study and an incidence of 0.40% of live births have been cited by Kumar V et al (2003) in their study. These sternocleidomastoid tumors were treated successfully which conforms to Kumar et al (2003) findings i.e. 90% success rate. Pediatric population had apart from benign and malignant diseases, inflammatory lesions also & few inconclusive conditions that were discarded from our study. Among the neoplastic causes, benign masses predominated over malignant lesions. This was contrary to the observation made by the Torsiglieri et al (1988) who observed malignant lesions in 11% and benign tumours in 3.5% cases. Overall incidence of malignancy was 33.96% in our series. Among malignant lesions, lymphoma was found to be the most common neoplasm in our study. Similar observation was also made by Cunningham et al (1987) & Torsiglieri et al (1988). Lymphoma was diagnosed in 15 cases on FNAC, which later were confirmed by histopathology.

Fig 7 : A 12yr old boy with secondaries from nasopharyngeal carcinoma

Fig 8 : Ameloblastic odontoma showing dentine and enamel formation (H&E x 200)

According to Jain's (1966) study on FNAC, lymphoma was diagnosed in 11% cases and secondaries in neck in 7%. FNAC should be used as a screening tool and further histopathological examination should be done to confirm the diagnosis where FNAC is negative to reach the correct etiological diagnosis. Others supported this view like Malakar et al (1991). Among lymphomas, mixed cellularity was found in all cases and Reed Stenberg cells were seen. Surgery was the mainstay of therapy in the majority of the benign lesions. Cryosurgery, sclerosing agents, steroids etc., were used for treating hemangiomas. Hodgkin's lymphoma was treated with 4 drug (CHOP) regimen and six cycles were repeated at 3 weeks interval. Combination chemotherapy in advanced Hodgkin's (stage iii & iv) using MOPD; ABVD regime has been reported by many authors (Corbett et al 1997). Other workers reported five-year survival rate of 97% for stage III and 74% for stage IV. Salivary tumors were treated by parotidectomy with preservation of facial nerve. Rhabdomyosarcoma was treated surgically in one case and radiotherapy in three cases of which two were lost to follow up and one is alive which is consistent with earlier studies of Karakas et al (2000). Nasopharyngeal carcinoma was treated by chemoradiotherapy. Majority of patients had recovered without any complications but few were lost.

CONCLUSION

The maximum number of cases were in the age group of 8-12 years with male predominance (4.5:1). The benign conditions (66.03) were more common than malignant (33.96). The most common site of

involvement was nasopharynx followed by neck. Only 5.57% cases were asymptomatic at presentation. The commonest benign swelling was Nasopharyngeal Angiofibroma & the commonest malignancy was lymphoma. FNAC, CT scan, MRI & histopathological study were the main diagnostic pillars. Surgery, radiotherapy & chemotherapy were used judiciously to mitigate the disease process.

Table-1: Showing symptoms in the pediatric patients with head & neck neoplasm.

Weight loss	80
Sore throat and tonsillitis	80
Swelling in neck	60
Dysphagia and dyspnoea	60
Fever	58
Loss of appetite	45
Proptosis	34
Epistaxis	24
Night sweats	12
Decreased vision	12
Discharge from swelling	02

Table-II: Showing diagnosis based on cytological & histopathological study

(a) Benign	(70/106)	(b) Malignant	(36/106)
Nasopharyngeal Angiofibroma	20	Lymphoma	15
Hemangioma	18	Nasopharyngeal carcinoma	08
Nasal gliomas	12	Rhabdomyosarcoma	04
Dermoid	12	Salivary gland malignancy	03
Papilloma	05	Thyroid carcinoma	02
Fibro-osseous lesions	05	Ameloblastoma	01
Neurofibroma	02	Ewing's sarcoma	01
Warthins tumour	02		
Ameloblastic odontoma	02		
Sternocleidomastoid tumour	02		
Total	106

Fig 9 : Haemangioma showing cavernous spaces lined with endothelial cells.(H&E x 200)

Fig 10 : Osteoma of the mandible showing osteoid material (H&E x 200)

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Address for correspondence:

Dr. Mohammad Ashraf
3/58, Gulmarg Colony
Lal Digg Road,
Aligarh-202002