

Pediatric Oral and Maxillofacial Lesions: A 26 Year Retrospective Review

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ABSTRACT

Objectives: To study the occurrence, distribution, types, and clinical presentation of the common maxillofacial lesions occurring in children and teens.

Methods: A total of 141 histopathology reports of patients, who had been diagnosed, treated and followed up at the maxillofacial units as an outpatient and inpatient at two main Royal Medical Services Hospitals of Jordan (King Hussein Medical Center and Prince Rashid hospital) between 1985 and 2011 were included in this study.

Results: Male to female ratio was 1.5:1. The highest percentage of lesions was seen in children aged 11 years. The majority of the lesions were inflammatory and reactive lesions seen in 36% of patients followed by cystic lesions in 22 %, and odontogenic tumors in 10.5% of patients. Non odontogenic tumors constituted 21.3% and malignant tumors 5%. Lesions presented as swellings were 47.5%, masses 45.4%, and as an ulceration 7.1%.

Conclusion: Inflammatory and cystic lesions remain the most commonly encountered oral and maxillofacial lesions in children and teens; malignant tumors are extremely rare and pose difficulty regarding the origin of the tissue they arise from and the modality of treatment to be involved.

Key words: Biopsy, Maxillofacial lesions, Pediatric.

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Introduction

Oral and maxillofacial swellings and masses encountered in children and teens are similar to those seen in adults with the exception of lesions that are peculiar to adults like squamous cell carcinomas, and those that are seen rarely in adults like malignant blastomas and rhabdomyosarcomas. The growth of the jaws and facial skeleton in children and teens usually affects the nature and development of lesions occurring in these tissues. Some lesions regress

with time, other lesions are affected by hormonal changes associated with puberty, and some lesions are aggravated by the growth of the facial skeleton. These factors must be taken into consideration when dealing with lesions occurring in this age group to formulate a stepwise plan for diagnosis, treatment and follow up.

Swellings and masses are the most common clinical presenting signs and symptoms in children while ulcers are seen more in adults. There are a vast number of studies worldwide

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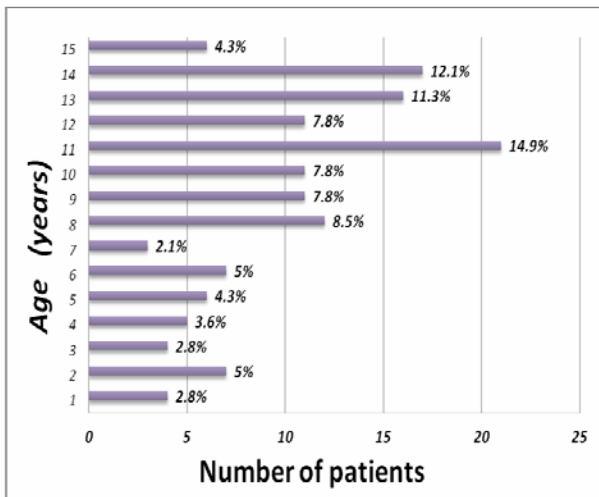


Fig. 1: The distribution of cases among the different ages

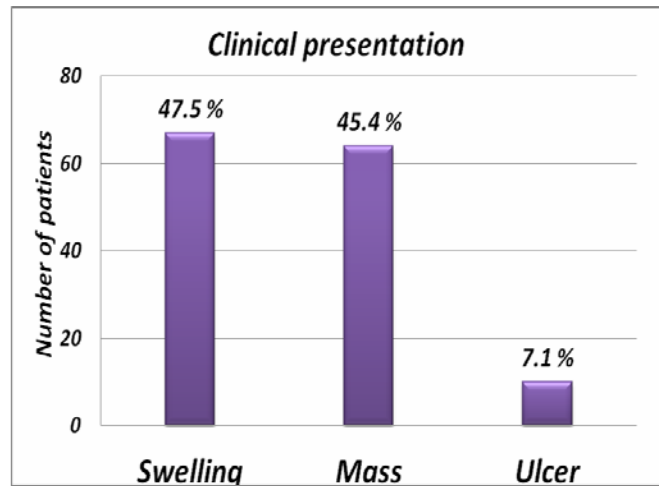


Fig. 2: Clinical presentation

describing the distribution and prevalence of oral and maxillofacial lesions in adults; however the studies that describe these lesions in children aged 0-14 years are scarce.

This study is a survey of oral and maxillofacial lesions occurring in children seen in the maxillofacial unit at two main Royal Medical Services hospitals, King Hussein Hospital in Amman and Prince Rashid Hospital in the city of Irbid in the North of Jordan over a period of 26 years.

Methods

A total of 141 histopathology reports of patients who are 14 years old and younger, who had been diagnosed, treated and followed up at the maxillofacial units as an out and inpatient at two main Royal Medical Services Hospitals of Jordan (King Hussein Medical Center, and Prince Rashid Bin Al-Hassan Hospital) between 1985 and 2011 were included in this study.

The following data were extracted and analyzed from the medical records of the patients: sex, age, preoperative diagnosis, the microscopic description and the final diagnosis.

Diagnoses of healthy tissues and inconclusive diagnoses were excluded. Lesions were categorized into nonspecific inflammatory lesions, benign soft tissue lesions, benign lesions in bone, and specific inflammatory lesions i.e. tuberculosis and malignant lesions.

This study had the approval of the authorizing Ethical Committee at the Royal Medical Services in Jordan.

Results

Eighty four (59.6%) of the cases studied were males and fifty seven (40.4%) were females: Figure 1 shows the distribution of cases among the different ages in years. Most of the cases presented as swelling and masses, 47.5% and 45.4% respectively, Figure 2. Benign tumors formed 95% of the cases and 5% were malignant tumors, Figures 3, 4, 5 showed that 36% of the lesions were inflammatory lesions whereas 22% were cystic lesions. Most of the cases were soft tissue tumors, Figure 6. The lesions occurring in mandible were 28.4% and in maxilla 23.4% whereas lesions occurring in the floor of the mouth and the upper lip were the least (Fig. 7).

The majority of cases were seen in patients aged 11 years (14.9%) followed by patients aged 14 years (12.1%) and the least number of cases were seen in patients aged 1 and 3 years (Fig.1).

Granulomas constituted the majority of cases: 9.2% pyogenic granulomas, 8.5% peripheral giant cell granulomas, and 3.5% central giant cell granulomas. Vascular lesion accounted for 8.5% of the cases (Fig. 3).

Tuberculous lymphadenitis constituted 4.3% of the cases and was peculiar to the submandibular region, 7% of the all cases were in bone in the form of ameloblastomas and central giant cell tumors, one case of myxoma is reported.

Malignant lesions were very rare with mucoepidermoid carcinomas being the commonest 2.1%, rhabdomyosarcomas and histiocytosis were equally frequent 1.4% and were seen in younger ages (Fig. 4).

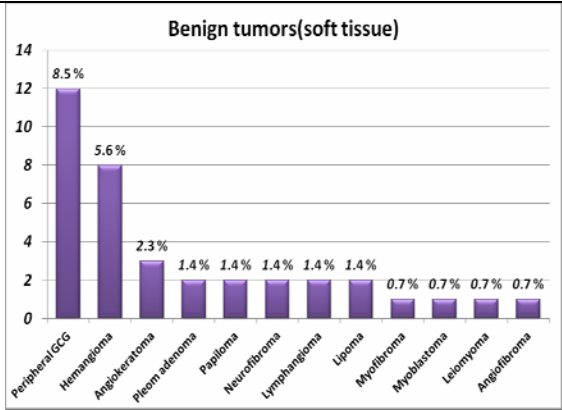


Fig. 3: Benign tumors

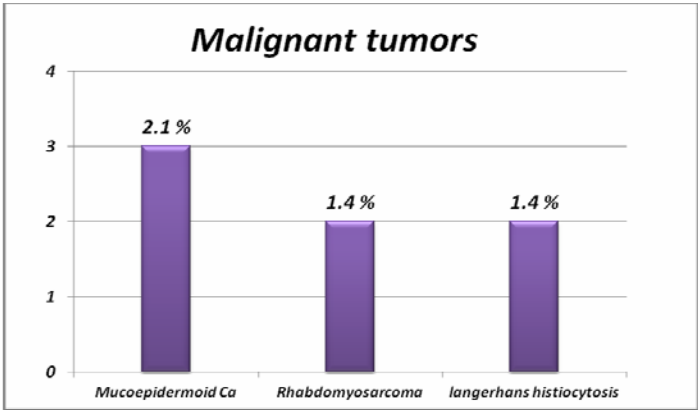


Fig. 4: Malignant tumors

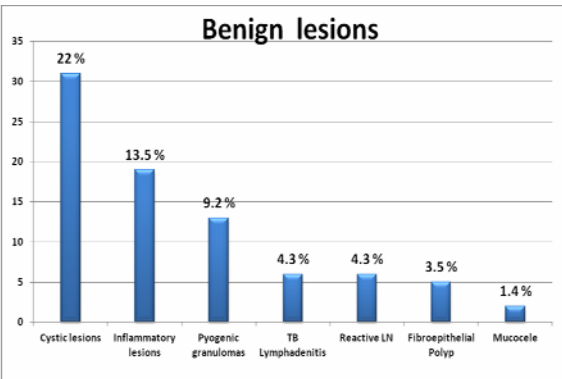


Fig. 5: Benign lesions

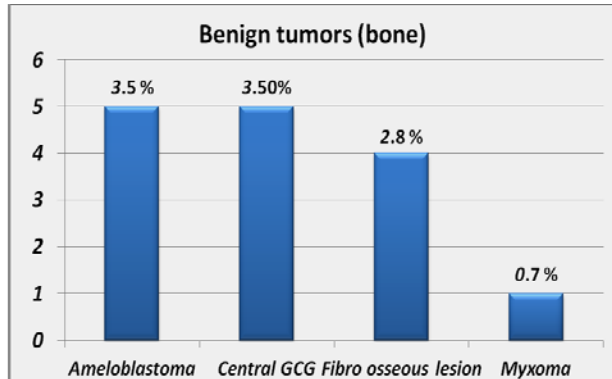


Fig. 6: Benign tumors in bone

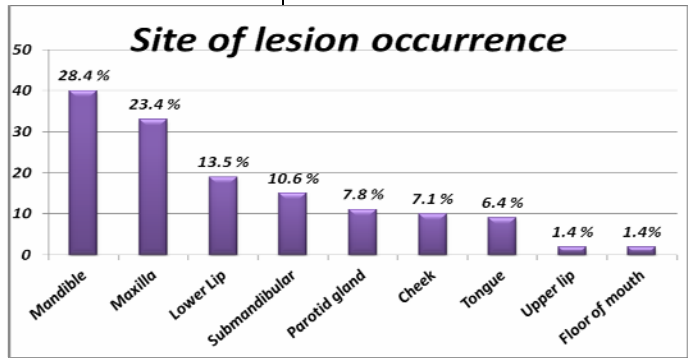


Fig. 7: Site of lesion occurrence

Discussion

Cystic lesions comprised the most prevalent entity in this group of young patients (31\141) (22%), 61% of these cysts were developmental and the remainder of the cysts were inflammatory, 24% of the developmental cysts were in the soft tissue of the floor of the mouth, tongue and neck in the form of dermoid, epidermoid and thyroglossal cysts, this finding agrees with the fact that in children the maxillofacial skeleton is growing and inflammatory cysts associated with infected deciduous teeth are rare.⁽¹⁾ Ochsenius *et al*,⁽²⁾ studied a large sample of odontogenic cysts in

the general population, they found that 50.7% were radicular cysts, 18.5% dentigerous cysts, 14.3% keratocysts, and 11.1% residual cysts. In his study of 69 pediatric patients with cystic lesions of the jaws, Bodner showed that 70% of the cysts were developmental and only 13.3% were inflammatory in origin and concluded that the treatment modality should be as conservative as possible in order to decrease the possible morbidity to the adjacent developing structures.⁽³⁾ Non specific inflammatory lesions formed 13.5% in this group. Biopsies submitted to the histopathology laboratory were labeled preoperatively as pyogenic granulomas, cysts, or

fibro-epithelial polyps and these were returned to the department with final diagnosis of non-specified inflammatory process. An explanation for this non-specified diagnosis could be attributed to the fact that polyps adjacent to infected deciduous teeth were submitted to histopathology exam at time of extraction, or submission of parts of crushed or damaged cysts wall or inadequate tissue in cases of pyogenic granulomas.

In this study pyogenic granuloma was seen more frequently in males than females (2.25:1) and were more frequently seen in upper and lower lips and this is in contrast with what was reported by Saravana,⁽⁴⁾ who reviewed 137 cases of pyogenic granuloma in all age groups where he showed more predilection to females than males and most of the cases were seen in the gingiva. Peripheral and central giant cell granuloma constituted 12% of all the lesions in this sample and were seen more frequently in males 58%. In his review of a large sample of peripheral and central giant cell granulomas in all age groups, Motamedi *et al.*⁽⁵⁾ showed that giant cell granuloma was 9.25% of oral lesions.

Hemangiomas accounted for 8 (5.6%) cases of the sample and were seen more frequently in males 1.7:1 and half of the cases were seen in the lower lip. The relatively low number of patients with hemangiomas reported in this study could be attributed to the fact that patients with disfiguring facial lesions are seen at other departments and parents are directed to other specialties unless lesions are intraoral or circumoral, and this also applies to lesions or swellings appearing in the neck.

Infantile hemangiomas are congenital vascular tumors comprised of rapidly dividing endothelial cells affecting up to 10% of population with a greater incidence in Caucasians, female patients, and premature and low birth-weight infants.⁽⁶⁾

Angiokeratomas were seen in three cases (2.3%), all were seen in the lower lip with skin extension, there were also cases of lymphangiomas involving the tongue and the lower lip and one case of angiofibroma in the maxilla. Lymphatic malformations are benign vascular lesions that can cause disfigurement and functional impairment. The most common preoperative symptoms are intralesional hemorrhage and infection; more serious

symptoms such as dysphasia and airway obstruction may also occur.⁽⁷⁾ They are subdivided into microcystic, macrocystic, and cheek and tongue are more likely to be of the diffuse microcystic variety of lymphangiomas.

Angiokeratoma is rare cutaneous vascular disorder of the dermis, associated with hyperkeratosis of the epidermis. Oral angiokeratoma is rare, it is usually seen in Fabry's disease and fucosidosis as a more generalized cutaneous disease. Solitary oral angiokeratoma is very rare.⁽⁸⁾

Tuberculous (TB) lymphadenitis was seen in six (4.3%) cases, males and females were equally affected, 50% of the cases were in the neck nodes, the other cases involved the cheek and parotid glands. In his review of 20 cases, Wang *et al.*⁽⁹⁾ reported four cases of TB in the head and neck in children. Extra pulmonary TB in the neck was commonly found in the submental and submandibular lymph nodes as well as the salivary glands.^(10,11)

Solid benign tumors in mandible and maxilla were reported in 15 cases (10.5%), ameloblastomas accounted for 5 (3.5%) cases, three of them in mandible and two in maxilla. In his review of 37 cases of ameloblastomas in children and adolescents Zhang *et al.*⁽¹²⁾ reported an incidence of 13.9% (37/267) of ameloblastomas in children, Olaitan and Adekeye⁽¹³⁾ reported an incidence of 14.6%, in our study ameloblastomas were 3.5% of the overall sample.

Benign fibro-osseous lesions (BFOLs) of the maxillofacial bones comprise a diverse group of pathologic conditions that includes developmental lesions, reactive or dysplastic diseases, and neoplasms,⁽¹⁴⁾ these lesions include Fibrous dysplasia, Ossifying Fibroma and Juvenile Ossifying Fibroma, Osseous Dysplasia and Familial Gigantiform Cementoma, in this study there were four cases of fibro-osseous lesions three of them in the mandible and one in the maxilla. One case of Odontogenic Myxoma was reported in the mandible in a female aged 15 years. In children, the prevalence of myxoma within the spectrum of Odontogenic masses may be somewhat higher than in adults; some authors quote a 12-17% incidence rate among pediatric alveolar soft-tissue masses.⁽¹⁵⁾

Malignant tumors in this sample of young

patients were seen in seven (5%) cases in the form of mucoepidermoid carcinoma, rhabdomyosarcomas, and Langerhans histiocytosis. Mucoepidermoid carcinomas were all seen in the parotid and they outnumbered the benign lesions in this region. Many publications agree that mucoepidermoid carcinoma is the most abundant malignant salivary gland tumor in young patients.^(16,17)

Rhabdomyosarcomas were seen in the cheek soft tissue in 2 (1.4%) cases. In contrast to other studies^(18,19) rhabdomyosarcoma in this study was not the most common malignant maxillofacial tumor in children and it has been seen as frequent as langerhans cell histiocytosis (LCH) that were seen in mandible, skull bones and clavicles.

There are three clinical subtypes of LCH: unifocal (single system, single site), multifocal (single system, multiple sites) and multiple organs/systems (multiple sites in different organ systems).⁽²⁰⁾ An oral manifestation may be the earliest sign of this disorder. In a review of 1,120 cases of documented histiocytosis X, Hartman reported that 114 (10%) cases had oral involvement, generally affecting the posterior region of the mandible.⁽²¹⁾ The etiology and pathogenesis of the disease remains mostly unclear.

Conclusion

The results of this study coincide in most of its parts with the published studies in the literature. A larger sample is needed nationwide to determine precise epidemiology of maxillofacial lesions in children to provide better understanding of these lesions and to facilitate diagnosis and early formulation of treatment plans.

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