ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at: www.ijmacr.com

Volume – 3, Issue – 2, March - April - 2020, Page No. : 06 - 11

Frequence Distribution and Clinical Significance of Oral Pathology in Children

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Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

A statistical study of 826 biopsies was performed in children ranging from 6-15 years received at the Pathology Department from outpatient unit. The histologic diagnosis were grouped into the following categories: 1) cysts, 2) tumor-like lesions, 3) inflammatory lesions, 4) neoplasms, 5) neck and head non-oral lesions, 6) dental anomalies and pulp diseases, 7) unclassified diagnosis. Cysts were the most frequent lesion (25.4%).Bone tumor-like lesions (19.8%) were less frequent than the soft tissue tumor-like lesions (80.1%). Inflammatory lesions and neoplasms in children, account for 15.6% and 9.2% of the lesions respectively. 85.5 % of the neoplasms were benign and 14.5% were malignant. Odontogenic tumours constituted 48.1% of all the neoplasm observed. These results signifies the need to be constantly aware of the possible presence of these clinical and radiographic lesions to allow for early diagnosis and adequate treatment.

Keywords: oral pathology, pedodontics.

Introduction

Most of the dental literature on oral pathology studies in children have been epidemiological in nature, with particular emphasis on caries and dental traumatism, malformations and genetic and systemic diseases .[1] Some cases of neoplasms or tumour-like lesions, mostly odontogenic, have also been reported.[2,3,4,5] The literature either affords unreliable data and classifications of oral lesions or reports information biased by other major child pathologies, mainly of head and neck .[4,5,6,7]The incidence of caries has decreased. [8,9,10]This fact will confer a leading role, in the near future, to the diagnosis and treatment of non-dental lesions in professional practice. Thus the need arises to assess the frequency of jaw and mouth child disorders. Hence the study was done to assess the frequency of oral-maxiIlo-facial lesions of surgical interest in children with particular emphasis on groups of interest in differential diagnosis. Our data can prove useful in geographical comparative analysis and the detection of variations in the incidence of oral pathologies in child populations.

Material and Methods

Cases of patients 6-15 years old (350 biopsies) were selected from the 1220 biopsies received over the period of 2 years (2017-2019) from the Department of pathology, Dental college, Jawaharlal Nehru Institute of Medical Science, Porompat, Imphal. Lesions were initially grouped as follows according to biopsy diagnosis: I) cysts, II)

tumour-like lesions, III) inflammatory lesions, IV) neoplasms, V) neck and head non-oral lesions, VI) dental anomalies and pulp diseases, VII) unclassified lesions. The first group included jaw and soft tissue cysts. The subgroup of jaw cysts included; those odontogenic in origin (radicular, dentigerous, keratocyst) and those non-odontogenic in origin (traumatic, fissural cyst). The lesions were classified according to the WHO criteria[13]. The subgroup of the soft tissue cysts included those cyst-like lesions originated in salivary glands and/ or secretory ducts (mucocele) and a few true cysts localized elsewhere (dermoid cyst, thyroglossal cyst). Tumor-like lesions were subgrouped according to their localization in bone and soft tissue. Lesions were in subgrouped according to localization in gingiva or oral mucosa. The group of inflarnmatory lesions included cases of gingivitis, lesions localized elsewhere in the oral mucosa, periodonto-apical lesions, cases of osteomyelitis and disorders of the lymphatic tissue. Neoplasms were subgrouped as benign and malignant. Benign lesions were subgrouped according to their origin as odontogenic and non-odontogenic. The V group included head and neck biopsies (nevus, sebaceous cyst). Group VI included dental morphological malformations, hypoplasia and cases of dentin resorption; pulpitis and pulp polyps. The group of unclassified diagnosis included cases without a definite diagnosis due to lack of adequate material or insufficient clinical data. The frequency of incidence for each group were expressed as the percentage of the total number of child biopsies. A statistical analysis was performed for groups I-IV. Groups V, VI and VII were not included as they were considered to be of no interest in this particular study.

Results

The number of child biopsies was equivalent for both sexes: girls 605, boys 615. Cysts (27.3%) and tumour-like lesions (26.0%) were the most frequent lesion in the 1220 biopsies reviewed (Table 1) .75.1% percent of the cysts (group 1) were jaw cysts; the radicular cyst was the most frequent odontogenic cyst and the traumatic bone cyst was the most frequent non odontogenic cyst . 24% of the cysts were soft tissue cysts; mucocele was the most frequent .(Table 2) .Bone tumor-like lesions were less frequent than the soft tissue tumor-like lesions . Fibrous dysplasia and central giant cell granuloma were in the former subgroup and gingival inflammatory hyperplasia and peripheral giant cell granuloma in the later respectively (Table 3). The most frequent inflammatory lesions (group III) were gingivitis , periodontitis and osteomyelitis. (Table 4). Benign neoplasms (group IV) were subgrouped for study purposes as odontogenic , the most frequent being odontoma (52.8%), ameloblastoma (11.3%) and myxoma (13.3%); and non-odontogenic , the most frequent being papilloma (39.2%) and hemangioma (24.3%) . The most frequent malignant neoplasms were non Burkitt's lymphoma (18.7%), osteosarcoma (12.5%) (Table 5). Groups V ,VI and VII constituted 21.8% of the total number of biopsies. The individual analysis of the lesions in these groups revealed, particularly for head and neck lesions and dental and pulp anomalies, that the samples were not significant in number. Biopsies in group VII could not be accurately diagnosed due to insufficient clinical evidence or inadequately fixed or insufficient biopsy material.

Table 1: Classification and distribution of 1220 biopsies in children

Group	Lesion	Number	Percentage (%)
I	Cysts	334	27.3
II	Tumours like lesions	318	26.0
III	Inflammatory	191	15.6

	lesions		
IV	Neoplasms	110	9.0
V	Head and neck neoplasms	84	6.8
VI	Dental anomalies and pulp diseases	78	6.3
VII	Unclassified diagnosis	105	8.6

Table 2: Distribution of jaw and soft tissue cysts in children.

Lesion	Number	Percentage (%)
Jaw Cysts	251	75.1
Odontogenic cyst		
Radicular cyst	152	60.5
Dentigerous cyst	65	25.8
Keratocys	16	6.3
Non Odontogenic cysts		
Traumatic bone cyst	12	4.7
Fissural cyst	06	2.3
Soft Tissue Cysts	83	24%
Mucocele	75	90.3
Other cysts	08	9.6
Total	334	

Table 3: Distribution of tumour-like lesions of bone and soft tissues in children

Lesion	Number	Percentage (%)
Soft tissue Tumor	255	80.1
Gingival		
Inflammatory Hyperplasia	112	43.9
Peripheral Giant CeIl Granuloma	63	24.7
Fibrous hyperplasia	52	16.3
Oral mucosa Fibrous hyperplasia	28	10.9
Bone	63	19.8
Fibrous Dysplasia	28	44.4
Central Giant Cell	22	34.9
Granuloma Eosinophilic	7	11.1
Granuloma Cherubism	6	9.5

Table 4: Distribution of inflammatory lesions in children

Lesion	Number	Percentage (%)
Gingivitis	72	37.6
Periodontitis	45	23.5
Osteornyelitis	25	13.0
Oral Mucosa	12	6.2
Lip and Tongue	09	4.7
Lyrnphnode tonsil	06	3.1
Palate	05	2.6
Unspecified localization	17	8.9

Table 5: Distribution of 110 Oral Neoplasms in Children**.**

Lesion	Number	Percentage (%)
1.Benign Neoplasms		
a). Odontogenic (53 cases)		
Odontoma	28	52.8
Ameloblastoma	06	11.3
Myxoma	07	13.3
Enomatoid Odontogenic Tumour	04	7.5
Benign Cementoblastoma	03	5.6
Ossifying Fibroma	02	3.7
Odontogenic Fibroma	01	1.8
Calcifying Odontogenic Cyst	02	3.7
Melanotic Neuroectodermal Tumours	00	00
b). Non-odontogenic (41 cases)		

Papilloma	16	39.2
Hemangioma	10	24.3
Lymphangioma	05	12.1
Osteochondroma	04	9.7
Osteoma	03	7.3
Angiomyoma	02	4.8
Schwannoma	01	2.4
Fibroadenoma	01	2.4
Pleomorphic Adenoma	01	2.4
2.Malignant Neoplasms (16 cases)		
Non Burkitt Lymphoma	03	18.7
Osteosarcoma	02	12.5
Cavum Carcinoma	02	12.5
Burkitt's Lymphoma	01	6.2
Chondrosarcoma	02	12.5
Ewing's Sarcoma	01	6.2
Adenoid Cystic Carcinoma	01	6.2
Fibrosarcoma	01	6.2
Myxosarcoma	01	6.2
Undifferentiated tumours	02	12.5

Discussion

The overall results of this survey can be considered representative of the prevailing child oral pathology. Till date there were very little inclusive review in the literature on the entire group of oral pathologies in children. However, the study reveals that the frequency of child biopsy for diagnostic purposes is lower than for the group which includes all patients, regardless of age. 94% of the cases correspond to the 6-15 age group, thus revealing the importance of this period in the appearance of pathologies. Moreover, a noteworthy increase in the number of cases occurs in the 6-15 age groups which coincide with the period of mixed dentition. After the age of 12 the number of cases tends to stabilize, and odontogenic lesions prevail. A definite association with dental caries also holds true for cysts, the most frequent group of lesions, in which epithelial odontogenic jaw cysts exist.[14] The most frequent cyst for children in our study was the inflammatory epithelial cyst, twice as frequent as the dentigerous cyst. Our results differ from those of Magnusson [10] who reported the dentigerous cyst to be the most frequent in children. Differences in socio-economic conditions and dental health, more than biological factors, could account for theses variations. Nevertheless, dentigerous cysts were quantitatively important (27.7% of the group). Several cases of tumoral transformation were found amongst these cysts in various studies. Keratocysts were an infrequent lesion in both children and adults followed by primordial cyst of which only two case were found in this study. The frequency of jawbone cysts (traumatic and aneurysmal bone cysts) was also low despite the fact they are considered lesions of childhood and adolescence.[11,14] Mucocele, particularly in lip and tongue, was the most frequent of soft tissue cysts. A few other malformative cysts (sebaceous, epidermoid, thyroglossal) were found in the mouth floor. Tumour-like lesions were exceptional for variety and quantity in soft tissue (80%) and jawbone (19.8%) and were similar in frequency to cysts. Most of these pathological processes occurred were linked to gingival and periodontal areas of the teeth. Inflammatory hyperplasia was the most frequent type. Pyogenic granulomas were included in this category. Many other cases of hyperplasia lacked the characteristic predominantly vascular component. They were thus grouped in a wider category which includes non-pyogenic granulomatous and transitional forms. Fibrous hyperplasias (pseudofibromas), particularly gingival forms such as palatal idiopatic fibromatosis, on occasions considered to be genetically determined followed by the peripheral giant cell granuloma which occurred in association with root remnants and erupting teeth.

Localized fibrous pseudotumours (frequently associated to lip or cheek biting areas) was the most frequent lesion of the oral mucosa. The rarest tumour-like lesions were found in jaw bone tissue and included two predorminant types: Monostotic fibrous dysplasia and central giant cell granuloma. Few cases of central granuloma were associated to impacted or erupting teeth.

Other childhood bone disorders found were eosinophilic granuloma and Cherubism. Various published cases of cherubism showed different giant cells types according to their degree of evolution or aggressiveness [12,16]. Diverse chronic and acute inflammatory lesions ranked third in importance. The most frequently recorded lesions were simple or necrotizing ulcerative gingivitis and chronic periodontitis (marginal or apical). Unspecific inflammations of lip, tongue and mucosa mycosis were less frequent. A significant 13.8% of chronic osteomyelitis, of odontogenic origin, which included few sclerosing cases (Garres type), reveals the importance of this disorder. Ameloblastomas and myxomas have been included in the group of benign tumors to conform with the accepted classification (WHO). However, some of the most aggressive cases for any age were found amongst these two types. Ameloblastoma (11.3%) constituted a significant number of clinically unsuspected childhood jaw tumors. This fact suggests, the importance of biopsy for children under 6 or for cases of mandibular dentigerous cysts of the permanent premolars. Benign non- odontogenic tumors did not exhibit particular characteristics for this age group with exception, perhaps, of pleomorphic adenornas which were reported to be frequent in children by Koch [10] and Sanders[11] who, yet, included only two cases in this group. The frequency of primitive malignant tumors was 0 % of the group, which is four times less frequent as reported by Chuong [8]in the only study on these neoplasms in children .Five of the cases listed corresponded to jaw primary lymphomas (Burkitt and non-Burkitt types). The finding of 4 cases of carcinoma is noteworthy as this pathology is hardly mentioned in oral pediatric literature. Head and neck lesions included mostly melanocytic lesions (pigmentations and nevus), dermoid or branchial cysts and unspecific pyogenic dermatitis. The lesions of this group were not analyzed; neither were the malformations. Pulpal alterations induced by medication have been described elsewhere.

Conclusion

The microscopic analysis of a significant group of child biopsies lacking a definite clinical diagnosis did not afford unequivocal results. This may be due to several causes, on occasions difficult to discriminate, such as biopsies performed at indequate anatomical sites, insufficient or superficial tissue and faulty fixation procedures. Although this fact involves purely technical aspects it suggests the need to intensify the knowledge of dentists and pediatric surgeons in the area of dental pathology. Future studies with larger sample size population are needed.

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How to citation this article: Dr.Humaira Nazir, Dr.Ifzah Usman, Wakambam Monalisa, "Frequence, Distribution and Clinical Significance of Oral Pathology in Children", IJMACR- March - April - 2020, Vol – 3, Issue -2, P. No. 06 - 11.