ACR Original Article

Histopathological review of peripheral lymphoid organs in children in a sub-urban setting

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Abstract

The study was a 3-year retrospective histopathological review of samples of peripheral lymphoid organs of children aged 0-16years received in the Histopathology Department, Irrua Specialist Teaching Hospital (ISTH), Irrua, between October 2010 and September 2013. A total of 183 specimens of children aged 0-16years were received out of which 53 (29%) were lymphoid specimens: 26 males and 27 females. Adeno-tonsilar tissue was the most common lymphoid tissue accounting for 75.5% followed by cervical lymph node (15.1%). Reactive hyperplasia which accounted for 81.1% was the most common diagnosis, followed by non-Hodgkins lymphoma (7.5%), Hodgkins lymphoma (5.7%) and tuberculosis (5.7%).

Keywords *: Peripheral lymphoid organs, children, reactive hyperplasia*

Introduction

The peripheral lymphoid organs comprising lymph nodes, spleen and mucosa-associated lymphoid tissues, are the sites of accumulation and further maturation of lymphocytes after their initial development in bone marrow and thymus.[1] These organs undergo changes as a result of diseases primarily affecting them and in several cases as a result of diseases affecting other organs, or diseases that are systemic in nature. These lymphoid tissues have been observed to be most immunologically active in children between 4 and 10 years of age with the immunological activity decreasing after puberty.[2]

Children are not little adults and the diseases they suffer from are not mere variants of adult diseases. Instead, the diseases encountered in this age group are unique or take distinctive forms.[3] Analyzing lymphoid organs in this age group, therefore, can be a useful tool in the study and diagnosis of diseases in children. However, but in this study, adenotonsilar tissue constituted 75.5% of the specimens.[4]

This study aims at reviewing the diagnostic entities with biopsy of lymphoid organs made in the Histopathology Department, ISTH, since commencement of histopathology services in October 2010

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Material and Methods

This was a 3-year retrospective analysis of biopsies of lymphoid organs in children aged 0 – 16 years as seen in the Histopathology Department, Irrua Specialist Teaching Hospital, Irrua, Edo state, between October 2010 and September 2013. Information about the specimens were extracted from the specimen register and request forms in the Department. All the specimens were formalin-fixed and paraffin-embedded. They were sectioned at 3-5 microns and stained with hematoxylin and eosin. The data generated was tabulated and analyzed with respect to age, sex and site. Ethical clearance for the study was obtained from the Hospital's ethical committee. The study was, however, limited by unavailability of immunohistochemistry for further characterization of lesions.

Result

During the period under review, a total of 183 biopsies from children aged 0-16years were received in the

histopathology laboratory, ISTH. Out of these, 53 were lymph node and adeno-tonsilar specimens, representing 29% of all specimens in this age group. The sex distribution of the biopsies was almost equal with 26 cases occurring in males and 27 in females.

Table 1 shows the age, sex, and site distribution of the specimens while table 2 shows the age and sex distribution of the histological diagnosis from these specimens. The number of specimens decreased with increasing age as there were 24, 21, and 8 cases in the 0-4yrs, 5-9yrs and 10-14yrs age group respectively

Table 3 shows the site distribution of the various lesions diagnosed.

In all, adeno-tonsilar tissue was the most common lymphoid organ sent for histological examination while reactive hyperplasia was the most commonly diagnosed lesion. It is noteworthy that the exact site of specimens was not stated in as much as 7.1% of the specimens analyzed.

Table 1- Age, Sex and Site Distribution

Site	Age Group (years)									Grand Total		
	0 – 4			**5 – 9**			**10 – 16**					
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**
Tonsils/adenoids	**12**	**10**	**22**	**8**	**8**	**16**	**-**	**2**	**2**	**20**	**20**	**40**
Cervical LN	**-**	**1**	**1**	**3**	**-**	**3**	**1**	**3**	**4**	**4**	**4**	**8**
AxillaryLN	**-**	**1**	**1**	**-**	**1**	**1**	**-**	**-**	**-**	**-**	**2**	**2**
Mesenteric LN	**-**	**-**	**-**	**-**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**1**
Unstated	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**2**	**-**	**2**
Total	**12**	**12**	**24**	**11**	**10**	**21**	**3**	**5**	**8**	**26**	**27**	**53**

M – Male; F – Female; T – Total

Table 2 – Age, Sex and Diagnosis Distribution

Diagnosis	Age Group (years)									Grand total		
	0 – 4			**5 – 9**			**10 – 16**					
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**
RH	**12**	**12**	**24**	**8**	**9**	**17**	**-**	**2**	**2**	**20**	**23**	**43**
NHL	**-**	**-**	**-**	**1**	**1**	**2**	**1**	**1**	**2**	**2**	**2**	**4**
HL	**-**	**-**	**-**	**2**	**-**	**2**	**1**	**-**	**1**	**3**	**-**	**3**
TB	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**2**	**3**	**1**	**2**	**3**
Total	**12**	**12**	**24**	**11**	**10**	**21**	**3**	**5**	**8**	**26**	**27**	**53**

M – Male; F – Female; T – Total

Table 3 – Diagnosis and Site Distribution

Diagnosis	Site					Total (%)
	Tonsils/adenoids	**Cevical LN**	**AxillaryLN**	**Mesenteric LN**	**Unstated**	
RH	**40**	**1**	**1**	**1**	**-**	**43 (81.1)**
NHL	**-**	**3**	**1**	**-**	**-**	**4 (7.5)**
HL	**-**	**2**	**-**	**-**	**1**	**3 (5.7)**
TB	**-**	**2**	**-**	**-**	**1**	**3 (5.7)**
Total	**40**	**8**	**2**	**1**	**2**	**53 (100)**

RH- REACTIVE HYPERPLASIA; NHL- NON-HODGKIN LYMPHOMA; HL- HODGKIN LYMPHOMA; TB- TUBERCULOSIS; LN- LYMPH NODE

Discussion

A total of 53 paediatric lymphoid samples were received over the 3 years under review amounting to 18.6 samples/year. This is relatively low compared to the 49.2/year and 41.7/year recorded in Port Harcourt[5] and Ilorin[6] respectively, but comparable to 12.6/year recorded in Benin[7] and 12.1/year recorded in Ife[8].

Adenoids and tonsils were the predominant lymphoid organ in this study accounting for 75% of the samples analyzed. These lymphoid tissues have been

observedto be most immunologically active between 4 and 10 years of age with the immunological activity decreasing after puberty.[2] Most (95%) of the cases encountered in this series were found in children aged less than 10 years.

Cervical lymph node which followed adenoid/tonsils in frequency in this series is the most commonly encountered lymphoid organ in many other studies.[6,7,9] Axillary lymph nodes and mesenteric lymph nodes were the other lymph node groups we encountered and they are also among the commonly encountered site for lymph node enlargement in many series.

Non-neoplastic lesions (reactive hyperplasia and tuberculosis) made up the majority (86.8%) of lesions in this study. This may be unconnected to the burden of infection in our environment. Similar findings were obtained by Obiorah and Offor[4] in Port Harcourt where 70% of lymph node lesions in children and adolescent were non-neoplastic.

Reactive hyperplasia is the benign and reversible enlargement of lymphoid tissues in response to antigen stimulation. Over 80% of the diagnosis made during the period under review belonged to this category. This is in consonance with the observation made by Obiorah and Ray-Offor[4] that RH was most commonly encountered in children and adolescent attributing it to the less developed immune system in children making them more prone to infectious and non-infectious causes of reactive hyperplasia. Non-specific reactive changes also accounted for 47.8% of the cases of cervical lymph node analyzed by SW More[10]. In the study by Adelusola *et al*[8] in Ife Nigeria, non-specific changes were also very high accounting for 31% of cases. In this series, inclusion of adenotonsilar tissues which were excluded in most other studies may have contributed to the high incidence of reactive hyperplasia.

The other pathologic entities encountered in this series were lymphomas (4 non-Hodgkins lymphoma and 3 Hodgkins lymphoma) and tuberculosis. These entities are not uncommon in the paediatric age group. They made up 17.4 %, 5.6 % and 48.4 % respectively of the lesions encountered by Olu-Eddo and Egbagbe[5] in their review of 126 lymph node biopsies seen over a 20-year period.

It is pertinent to note that the majority (87.5%) of lesions encountered in the cervical lymph node were neoplastic and infectious diseases requiring drug therapy. This is similar to findings by other researchers.[7]

Generally, there was a slight female preponderance of lesions with a M: F ratio of 1: 1.04. However, malignant tumours were preponderant in males as 5 of the 7 malignant lesions (71.4%) encountered in this study occurred in males. In a previous study of neoplasms of childhood, Igbe et al[11] observed that malignant lesions occurred more frequently in males while benign tumours occurred more frequently in females.

Conclusion

Some important observations were made in this study. 0ne, most adenotonsilar lesions in children are benign non-specific reactions to antigenic stimulation or reactions to diseases elsewhere in the body. Two, most cervical lymph node lesions are neoplastic or infectious conditions which require drug intervention to halt disease progression. Three, inadequacy of clinical information supplied by clinicians is also prominent in this study as the site of specimen in 7.1% of cases was not stated. Although most of the lesions encountered were benign, the importance of lymph node biopsy is underscored by the diagnosis of a single case of malignant or infectious conditions which may be fatal if not halted by therapeutic intervention.

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