A histopathological study of ovarian neoplasms in children in a tertiary hospital of northern Nigeria

Abdullahi Mohammed, S. A. Malami, B. Calvin, K. Abdullahi

ABSTRACT

Background: Information concerning the frequency and pattern of ovarian tumours in children is scant, more so in northern Nigeria. In view of this, we reviewed ovarian biopsies obtained from children in Zaria over a 25-year period. **Materials and Methods:** Ovarian tumours occurring in 48 patients of age 15 years and below were reviewed and classified using the current World Health Organization (WHO) histological classification of ovarian tumours. **Results:** Ovarian tumours in children accounted for 8.6% of all cases of tumours seen in all age groups over the period. Among all the malignant tumours seen in this period, 32% occurred in children, and Burkitt's lymphoma accounted for 31.2% of these. Germ cell tumours accounted for 58.0% while epithelial tumours had a frequency of 2.1%. **Conclusion:** Burkitt's lymphoma is the most common childhood ovarian tumour in Zaria, northern Nigeria.

Key words: Children, neoplasms, ovary

DOI: 10.4103/0189-6725.62848

INTRODUCTION

Ovarian neoplasms are rare in children,[1] and little information is available on the relative frequency and pattern of these in Nigerian children.[2] Earlier studies on ovaries of African children centred on individual neoplastic lesions rather than general neoplastic growths.[3,4] Other studies in African children generally included all other age groups in their analysis.[5-14]

It is worthy of note that these lesions in children may have certain peculiarities even though they may constitute only a small proportion of all ovarian neoplasms.[1]

Department of Pathology, Ahmadu Bello University Teaching Hospital, Zaria, Nigeria.

Address for correspondence:
Dr. Abdullahi Mohammed
Department of Pathology,
Ahmadu Bello University Teaching Hospital,
Zaria, Nigeria.
E-mail: medvisory@yahoo.com

We retrospectively reviewed ovarian biopsy materials obtained from 48 children in our centre over a 25-year period.

MATERIALS AND METHODS

All cases of ovarian tumours received in the Department of Pathology, Ahmadu Bello University Teaching Hospital, between January 1981 and December 2005, were retrieved. Subsequently, those in children below 15 years of age were subjected to further study. The routine cards, bench books and histology slides stained with routine haematoxylin and eosin (H and E) were retrieved. Where necessary, fresh paraffin sections were made and stained with routine H and E. Special stains for fibrous tissue, smooth muscle and mucin identification were used where necessary. Cases where the request card or the slides and paraffin blocks were missing were excluded from the study.

The tumours were classified according to the World Health Organization classification of ovarian tumours.[15] Synchronous bilateral tumours of the same histologic type were regarded as one.

RESULTS

Over the study of period (1981–2005) of 25 years, a total of 48 consecutive cases of neoplastic enlargement of the ovary were diagnosed in children aged 15 years and below.

This made up 8.6% of all ovarian tumours in all age groups. Among them, the malignant ones accounted for 32% of all malignant ovarian tumours in all age groups.

The various histological types seen were as follows [Table 1]: 58% germ cell tumours [mature cystic teratoma 14 (29%), dysgerminoma 7 (14.6%), yolk sac tumours 2 (4.2%), embryonal carcinoma 2 (4.2%), mixed germ cell tumours 1 (2.1%), immature teratoma 2 (4.2%)], 31.2% Burkitt's lymphoma; 8.4% sexcord – stromal tumours [juvenile granulosa cell tumours 2 (4.2%), malignant granulosa cell tumours 1 (2.1%),

Table 1: Age distribution of 48 cases of ovarian tumours in children (benign plus malignant)

Histological types	Age of patients (years)			Total (%)
	0–4	5–9	10–15	
Germ cell tumours				
Mature cystic teratoma	3	5	6	14 (29.0)
Dysgerminoma	2	1	4	7 (14.6)
Yolk sac TMR (EST)	1		1	2 (4.2)
Embryonal carcinoma		2		2 (4.2)
Mixed germ cell TMR	1			1 (2.1)
Immature teratoma		1	1	2 (4.2)
Epithelial tumours				
Cystadenocarcinoma	1			1 (2.1)
Sexcord – Stromal TMRS				
Granulosa cell TMR (malignant)		1		1 (2.1)
Granulosa cell TMR (juvenile)		1	1	2 (4.2)
Sertoli leidig cell TMR			1	1 (2.1)
Miscellaneous				
Burkitt's lymphoma	1	5	9	15 (31.2)
Total (%)	9 (18.8)	16 (33.3)	23 (47.9)	48 (100)

sertoli leidig cell tumour 1 (2.1%)]; 2.1% epithelial tumours [cystadeno carcinoma 1 (2.1%)].

Overall benign tumours accounted for 17 (35.4%) and malignant tumours accounted for 31 (64.6%) cases.

The age distribution of the ovarian tumours was as follows: nine (18.8%) occurred in 0–4 years, 16 (33.3%) in 5–9 years and 23 (47.9%) in 10–15 years [Table 1].

Mature cystic teratoma occurring in 14 (29%) was the most common benign tumour and was most prevalent between 5 and 15 years of age [Table 1].

The most common malignant tumours were Burkitt's lymphoma, 15 (48.3%) and dysgerminoma, 7 (22.6%) [Table 2], their peak age of presentation being 10–15 years [Table 2].

The major clinical features of presentation were abdominal swelling, 85% and abdominal pain, 40%.

DISCUSSION

Over a period of 25 years, 48 cases of ovarian tumours in children were recorded in this tertiary institution, which has served, for most of this period, the whole of northern Nigeria. This figure is low when compared to what was seen in Ibadan, South Western Nigeria, over the same period of time, which recorded 122 cases.[2] Sigmund *et al.*[16] recorded 75 cases in 44 years from the Toronto Children Hospital in the same age group.

Table 2: Age distribution of 31 cases of malignant ovarian tumours in children.

Histological types	Age of patients (years)			Total (%)
	0–4	5–9	10–15	
Germ cell TMRS				
Dysgerminoma	2	1	4	7 (22.6)
Yolk sac TMR (EST)	1		1	2 (6.5)
Embryonal carcinoma		2		2 (6.5)
Mixed germ cell TMR	1			1 (3.2)
Immature teratoma		1	1	2 (6.5)
Epithelial TMRS				
Cystadeno carcinoma	1			1 (3.2)
Sexcord – Stromal TMR				
Granulosa cell tumours (malignant)		1		1 (3.2)
Burkitt's lymphoma	1	5	9	15 (48.3)
Total (%)	6 (19.4)	10 (32.3)	15 (48.3)	31 (100)

This low figure of ovarian tumours in children may be explained by possible underdiagnosis or an actual rarity of these lesions in children, as suggested by some earlier reports.[17,18]

The frequency of occurrence of the ovarian tumours increased with increasing age, with the highest (47.9%) occurring in the age group of 10–15 years. This is comparable with the findings of Ibadan and James and Maxson.[2,15]

Ovarian tumours in children in this study accounted for 8.6% of all ovarian tumours in all age groups. Malignant tumours accounted for 32%, which is a significant proportion in this study. This can be explained by the high relative incidence of Burkitt's lymphoma in African children. Excluding Burkitt's lymphoma, the malignant tumours (64.6%) will be halved and thus the proportion of malignant contribution by childhood ovarian malignancy to the overall malignancy will be remarkably reduced. Other African studies show a similar trend, where Burkitt's lymphoma played a significant role in contributing to the higher proportion of malignant ovarian enlargements in children.

Regarding other primary ovarian tumours, germ cell tumours predominate, as in other similar studies. The major contributor here is mature cystic teratoma (29%). This is less than the reported frequency of 40–60% recorded in some literature.[16] The second most common germ cell tumour observed in this study is dysgerminoma (14.6%). However, in this study, it is the most common malignant germ cell tumour, which is in keeping with observations in other studies.[16] Interestingly, the other germ cell tumours: yolks sac tumour, embryonal carcinoma and immature teratoma, all share a similar

frequency of 4.2%. This contrasts with findings in other centers, which show that yolk sac tumour is the second most common of the germ cell tumours.[16]

The sexcord – stromal tumours comprising 10% of all ovarian tumours, as reported in the literature[16] (as having a 10% frequency of all ovarian tumours), have a low overall frequency, with the juvenile granulosa cell tumour being the most common, 4.2%.

Epithelial tumours however have maintained a low frequency of 1% in keeping with what is obtained in other centres.[16]

These findings show that there is some degree of similarity and a number of variations in the frequencies of the various childhood ovarian tumours in this centre when compared with others.[15,16]

This study has revealed that Burkitt's lymphoma is the most common malignant childhood neoplasm of the ovary in northern Nigeria.

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Source of Support: Nil, **Conflict of Interest:** None.

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