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Abstract

BackgroundObjectives: The aim of this study was to determine the mode of presentations, clinical profile and the sensitivity of imaging in the abdominal tumours in paediatric and types of tumours.Methods: This was a prospective and retrospective cross sectional study conducted in Khartoum Teaching Hospital and Ribat University Hospital in the period between April 2012 to April 2014. Variables studied included clinical presentations, imaging used for work up, types of abdominal tumours with regional distributions, and duration of symptoms.Results: fifty-eight patients enrolled, males, 55.2

Index terms—

1 I. Introduction

palpable mass in the abdomen of a child is a serious finding. In a small child, the daily bath is always given by the mother,i t is thus common for the mother to notice a mass in the abdomen while scrubbing or drying the child. The child may have no symptoms and is unaware of the mass. The mass may be the only sign of something not normal.

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2 II. Results

Fifty-eight patients were enrolled in this study. Of the total number, 32 were male (55.2%) and 26 female (44.8%), **??**Figure: 1). their ages range between (28 days to 13 years), mean ages were 4.6 years(std ± 3.4).

Regarding geographical distributions, thirty (51.7%) patients from the central part of the Sudan, sixteen (27.6%) from the West, nine (15.5%) from Gezira, three cases (5.2%) from the Northern part of Sudan, and no cases in this study group from the East.

The common presenting symptoms that include the following:

Twenty patients (34.5%) presented with abdominal mass, thirty-two(55.2%) presented with abdominal mass and pain together,(so 89.7% presented with abdominal mass). four of patients(6.9%) presented as acute abdomen(an intussusceptions), two (3.4%)patient came with abdominal mass and jaundice, one(1.7%), (Table **??** 1). Other symptoms that associated with mass were urinary symptoms, in which six patients (10.3%) had episodes of urine retention. There are some constitutional symptoms such as fever, which found in forty-three (74.1%) of patients (Table **??** 1), another symptoms like constipations, fatigability and loss of appetite also found. The duration of symptoms range between 15 days to3 months, mean 1.7 months, and (std± 0.73).

During clinical assessment, fifty-two (89.7%) had obvious abdominal masses. two with jaundice, Regarding blood investigation, forty-five of them (77.6%) were presented with anemia(Table **??**1) and received blood transfusions.

Concerning imaging investigation, forty-six (79.3%) of them under went abdominal ultra sound scanning (US), with sensitivity (67.4%), sensitive in (31) patients. And CT scan was done for Forty-seven (81%), with sensitivity (80.6%), sensitive in (38) patients, and only two patients (3.4%) had MRI, which sensitive in both cases. Variables studied included clinical presentations, imaging used for work up, types of abdominal tumours with regional distributions, and duration of symptoms.

Results: fifty-eight patients enrolled, males, 55.2 %(n=32), and females, 44.8 %(n=26), ages group range between (28 days-13 years) with mean 4.6 years. 51.7% from the center of Sudan, 27.6% from West, 15.5% from Gezira, and 5.2% from North. Most of them presented with abdominal mass and pain 89.7 %(n=52), fever 74.1% (n=43), anemia 77.6 %(n=45), four (6.9%) of them presented as acute abdomen (intussusceptions), two presented with mass and jaundice. Six presented with urine retention (10.3%). The duration of symptoms (15days -3 months). The imaging used were, CT&US with sensitivity, 80.3% & 67.3%, respectively. Histologically: 91.1% malignant tumours, the rest were benign and two cases; (abdominal TB). WT 31%(n=18), lymphoma 27.6%(n=16), neuroblastoma 12.1%(n=7), HB & teratoma 6.9%(n=4) for each, neuroectodermal 3.4%(n=2), adinocarcinoma, fibro sarcoma, rhabdomy-osarcoma and peutz-jegher 1.7%(n=1) for each. Two cases 3.4% were abdominal TB.

About nineteen pati-ents (32.8%) died shortly after starting workup (late presentation).

Conclusion: Abdominal mass in paediatric is serious conditions. Good evaluation, awareness with symptoms and signs with reliable imaging and histological investigations; are a corner stone for the early diagnosis and improvement of outcome.

Histological diagnosis was done for all patients, these include (incision, tru-cut, and excitional biopsy).

The final results of histological diagnoses were as following: malignancies (91.1%), the rest were benign and two cases; abdominal TB.

Concerning the types of tumours; eighteen patients (31%) were Wilm's tumor(Wt), sixteen (27.6%) lymphoma, seven(12.1%) neuroblastoma (NB), four(6.9%) hepatoblastoma(HB), four(6.9%) teratoma, two cases(3.4%) neuro-ectodermal tumors, others rare cases were adinocarcinoma of the small bowel, fibrosarcoma, Rhabdomyosarcoma, and peutz-jegher syndrome, one case for each(1.7%). Two cases (3.4%) were diagnosed finally as abdominal tuberculosis (TB) (table **??**).

Thirty-nine of them (67.2%) underwent surgery, and nineteen (32.8%) not. These were died during the workup and some just started neoadjuvant treatment (late presentation).

3 III. Discussion

In this study fifty-eight (58) patients were included. The ages groups of the patients in the study range from (28days to 13 years), mean ages was (4.6 years), these means that the youngest patient was less the one month old and the oldest patient was 13 year, and in general the majority of ages were between 2-3 years.

most common symptoms and signs:

-Abdominal mass, twenty patients (34.5%) -Abdominal mass & pain, thirty-two (55.2%).

This means that about (89.7%) of patients presented with abdominal mass.

-Acute abdomen (intussusceptions) in four patients 6.9%.

-Abdominal pain and jaundice (3.4%).

-Other symptoms; burning micturation and urine retention in six patients (10.3%). There are some constitutional symptoms such as fever which found in forty-three (74.1%) of patients (table: 1), constipations, and loss of appetite. These symptoms indicate the effect of complication, as some of patients presented late and this is similar to the study that said The care of children with malignant solid tumors in sub-Saharan Africa is compromised by resource deficiencies that range from inadequate healthcare budgets and a paucity of appropriately trained personnel ,and this similar to literature review that in general presentation varies depending on the underlying pathology of the abdominal mass Regarding the duration of symptoms, this range between the (15 days-3 months) (mean 1.6), and the majority of them (44.8%) presented within 2 months. The reasons for delayed of presentation in our study, were attributed to that; the majority of presenting symptoms were painless abdominal mass (and in addition to lack of the health care among nearly all the mothers), the next is the, most of the patients come from remote areas and the accessibility is a problem the other reason which picked up is that, some of them had finance problems.

The distribution of patients according to the residence; most of the patients (51.7%) with abdominal mass were from the center (including the capital) but these majority of patients most of them originally from the out of a center and may be related to increased number of migrations toward the center. (27.6%) from the West, (15.5%) from Gezira,

(5.2%) from the Northern part of Sudan, and no case reported from the East.

All patients underwent clinical evaluation (history, examination, and investigations), from the history the majority of them present with abdominal mass and pain (see above), others with only abdominal mass that discovered by their mothers and this corresponding to the general rule, which says that most of the abdominal mass in children (mainly WT) are detected by mothers during bathing their babies.

On examination, most of them looks unwell, cachexic, and these are the main features of late presentation, and about fifty-two (89.7%) had abdominal masses. Forty-three (74.1%) had fever. Regarding blood investigations, about (77.6%) had anaemia(n=45) all of them received blood, again this is the sign of late presentation. Regarding imaging investigations, US done for forty-six patients and the sensitivity was(67.3%), in the comparison with the study done in period between 1990-1998 in Sudan for abdominal masses in infants and children , the sensitivity of US was (92.3%). CT scan done for forty-seven and the sensitivity was (80.3%). in addition to that most of patients from poor families, and this observed in our study, some patients left the hospital before complete the workup.

Biopsy was performed for the patients and the final (histological) diagnosis were the following; fifty-one (91.1%) malignant, and seven benign these including two cases of TB.

Nephroblastoma was the predominant, comprised about eighteen patients (31%), followed by lymphoma sixteen (27.6%), neuroblastoma seven (12.1%), hepatoblastoma four(6.9%), teratoma four (6.9%) ,two cases (3.4%) neuro-ectodermal tumors, others rare cases were adino-carcinoma of the small bowel, fibro-sarcoma, rabdomyosarcoma, and peutzjegher syndrome, one case for each(1.7%). Two cases (3.4%) were diagnosed finally as abdominal tuberculosis TB (table **??**).

In comparison with previous study in Sudan which done within 8 years duration; the number of tumour now increased with the predominant is WT, previously was lymphoma.

This study is similar to that done by Rai AT and Moazam F. of 53 patients between the ages of 1 and 18 years, with malignant abdominal tumors seen between 1987 and 1993 were reviewed. Wilm's tumor was the most common tumor constituting 28.3% of all cases. The others included Non-Hodgkin's lymphomas (20.8%) and neuroblastomas (11.3%).

4 IV. Recommendations

Since paediatric abdominal tumours are increasing recently, we recommend the following: ? Improvement of heath education for mothers to be aware about early symptoms and signs of abdominal mass. ? Health personnel must be aware to examine the abdomen carefully for any reason in order not to miss abnormalities. ? Early seek of surgical advice is a must.

? Protocol and guideline for abdominal tumours management in children should be adopted, and multidisciplinary team should be established. Including; paediatric surgeons, oncologist, pathologist, radiologist.

? Imaging and histological investigations must be done properly and definitely, including cell type, degree of differentiation, histochimisteryand tumour marckers are appropriate for better management and outcome. ? Funding for paediatric patients with tumours should be discussed, and at least should be free as most of patients from remote areas and poor. ? Finally, tumour registry should be resumed, for documentation and evaluation to know the outcome and the epidemiology of tumours to define accusative factors, for some of these tumours when there is some preponderance of certain tumour in ascertain geogra-phical arises; e.g. EBV in BL in Uganda. [1]

Figure 1: A

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symptom	No (%)	fever		anemia		Urine retention	
		yes	no	yes	no	yes	no
Abdominal mass	20 (34.5%)	11	9	11	9	4	16
Mass & pain	32 (55.2%)	27	5	32	0	2	30
Acute abdomen	4 (6.9%)	4	0	0	4	0	4
Mass& jaundice	2 (3.4%)	1	1	2	0	0	2
total	58 (100%)	43	15	45	13	6	52

Figure 2: Table 1 :

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Tumour	Number		Age(years)		Total
	male	female	<5	> 5	
Wilm's tumour	8	10	13	5	18
Lymphoma	11	5	7	9	16
Hepatoblastoma	2	2	4	0	4
Neuroblastoma	6	1	5	2	7
Teratoma	1	3	3	1	4
Adenocarcinoma	1	0.0	0	1	1
Ptz	1	0.0	0	1	1
Ganglioneuroma	0.0	1	1	0	1
Neuroectodermal	0.0	2	2	0	2
Fibrosarcoma	0.0	1	0	1	1
Rabdomyosarcoma	1	0.0	1	0	1
Abdominal TB	1	1	0	2	2
Total	32	26	36	22	58
Percentage	55.2%	44.8%	62.1%	37.9%	100%

Figure 3: Table 5 :