

FREQUENCY OF DIFFERENT TYPES OF ABDOMINAL MALIGNANCIES IN CHILDREN AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: To determine the frequency and types of various abdominal malignancies in pediatric patients, presented to Khyber teaching hospital, Peshawar.

Material and Methods: This retrospective review of data was conducted in Khyber Teaching Hospital, Peshawar. Study population was children, presenting to emergency or outpatient department (OPD) with verified abdominal cancers during Jan 2017 to June 2019. Abdominal tumors were broadly divided into 6 groups. Patients with primary tumor outside abdominal cavity and age above 14 years were excluded. Age-specific frequencies were designed by age and sex.

Results: The study included 51 children, aged 0-14 years, with various types of abdominal cancers. Twenty nine patients were male (56.2%) and 22 were female (43.8%). Mean age was 2.5 year. The most frequent abdominal malignancy was lymphoma which was about 34 % (18). It was followed by neuroblastoma 28% (14) and Germ cell tumors 15% (8).

Conclusion: Most common abdominal malignancy was Lymphoma. Neuroblastoma and germ cells tumors were also common.

Key words: Malignancies, Childhood, Frequency.

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INTRODUCTION

Worldwide, cancer is a major health problem that lacks a universal solution. It is the second most common cause of mortality in the world. Valid data plus implementable solutions are required to deal with growing cancer problem. It is best done in National Cancer Control Plans (NCCPs). Unfortunately only 29% of developing countries have NCCPs and that are still inefficient. In Pakistan there are regional centers (e.g. Punjab Cancer Registry, PCR) and institutes providing local cancer data. Pakistan has no national cancer registry.

The frequency of abdominal malignancies varies nationally⁴ as well as internationally. Generally, developing countries have lesser frequency of childhood abdominal cancer than developed countries. This may be due to problems associated with patient registration and data collection. Still the developing countries stand the great-

est burden of childhood abdominal cancers.

In the United States, childhood abdominal cancer frequency fluctuates between racial and ethnic groups. In 2006-2010, the incidence rate was lowest for an American Indian/native Alaskan group and highest in a non-Hispanic White group. This racial/ethnic variation may be due to changes in genetics, diet, environment, migration, education level, infections as well as geographical factors. Some developed countries like Australia Switzerland,¹⁰ USA shows an incidence rates of 140-160 per million for various abdominal cancers. The identification of an abdominal mass in a child, either accidental or symptomatic, may be due to an abdominal malignancy. Most common abdominal malignant tumors are non-Hodgkin lymphomas, renal tumors, and Hodgkin lymphomas. Abdominal tumors in infants and teenagers can present intra-abdominally or in the retro peritoneum.¹⁴ The most common clinical presentations of tumor were palpable abdominal mass (41%) and peripheral lymphadenopathy (33%).¹⁴ Pakistan has many racial and ethnic groups. Different racial and ethnic groups show marked variation in cancer distribution and frequency from one area of the country to another on.¹⁴ A huge number of cancer patients are not registered in our country.¹⁴ Both of these factors definitely lead to statistically significant variation in cancer data. This study aims to find the frequency and types of abdominal cancer in children. In these circumstances, it is very im-

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portant that high-quality local data is collected that contributes to national cancer data.

MATERIAL AND METHODS

This was retrospective review of data, which was done in Khyber Teaching Hospital (KTH), a 1200 bedded tertiary care hospital in Peshawar, Khyber Pukhtoonkhwa. Duration was from January 2017 to June 2019. it was conducted after approval from institution research and ethical review board (IREB). The study population was children aged 0-14 years that presented to emergency or OPD of Khyber Teaching Hospital, with histologically verified or newly diagnosed abdominal cancer. The primary sites of cancers were identified and coded for abdominal portion, into 6, age wise groups. All patients with abdominal malignancies between 0 to 14 years admitted through outpatient department (OPD) and emergency were included. Patients with metastatic tumor with primary somewhere else and individuals of age above 14 year were excluded. Data about socio-demographic characteristics such as name, age, sex, age at diagnosis, date, site, nationality, residence, and type of cancer was collected according to a special form designed for the purpose of the study. Recorded data was summarized on a data sheet excel program. To ensure completeness and accuracy, the data was check on and reviewed several times both manually and electronically. Duplication of data was avoided by using the patient's full names (patient & father).

The data was typed on an excel sheets. Then was transformed into an SPSS (Statistical Package for Social Sciences) program version 23 (IBM, Chicago, Illinois, USA) for statistical analysis. Children were classified by age at time of cancer diagnosis. Frequency was calculated based on the estimated total admission during the period.

RESULTS

Among 51 patients, 29 patients were male (56.2%) and 22 were female (43.8%). Mean age was 2.5 year (standard deviation, SD 2). Age wise patient were grouped as: < 1 year, 6 (12.5%), 1-4 years, 14 (28.12%), 5-9 years, 13 (25%), 10-14 years, 18 (34.3%). The most frequent abdominal malignancy was lymphoma (group 1) which was about 34% (total 18) in both genders. it was followed by neuroblastoma (group 2) 28% (total 14), germ cell tumors (group 5), 15% (total 8), renal tumors (group 3), 9% (total 4) hepatic tumors (group 4), 5% (total 3) & others (group 6), 8% (total 4), see table 1 for gender wise distribution.

Higher abdominal cancer frequency was observed in males (male/female ratio, 1.2; $p < 0.05$). The greater rate among males was due to a substantially higher frequency of 'lymphomas (group 1). The highest frequency was observed in children 4-5 years old, followed by those aged 1-4 years, 10-14 years, and <1 year (see Table

1). The higher rate among children 4-5 year old was largely due to a substantially higher frequency of lymphomas (group 1), 'neuroblastoma (Group 2) and renal tumors (group 3).

Table 1: Gender wise frequency of abdominal tumors.

Diagnostic group	Male	Female	Total	M/F ratio
Lymphomas	11	7	18	1.8
Neuroblastoma	7	7	14	1.0
Renal tumors	1	3	4	0.9
Hepatic tumors	2	1	3	1.1
Germ cell tumors	4	4	8	1.0
Other and unspecified malignant neoplasms	2	2	4	1.1

DISCUSSION

We attempted to find out frequencies and types of abdominal malignancies in pediatric patients. Recognition of childhood abdominal malignancies are difficult. It is because of low incidence and similarity in clinical presentation. Literature shows various average ages for various tumors. For lymphoma mean age was [11.0 (± 5.1) years] in USA, while we had 4.5 years. For neuroblastoma mean age was 19 months, this was less than average 3 years of our results. Renal cell tumors (4.3 years), germ cells (5.8 years) and other nonspecific tumors were (10 years) in India. All 3 had lower average ages in our study. Average ages were also less than Kenya and Nigeria.

In our study, the frequency of childhood abdominal malignancy subtypes markedly fluctuated in age related groups. In first (aged < 1 year) and 2nd group (1-4 years), the most common malignancy was neuroblastoma. In group 3 (5-9 years) and 4 (10-14 years), lymphoma was the most frequent cancer. The most common tumors in this study were lymphomas (34%), comparable to a study in Basra, Iraq. its frequency was more in male gender. it was followed by neuroblastoma and germ cell tumors. These results were also comparable to those reported previously for Korea during the period 1993-2011. Renal tumors frequency showed marked variation from international data, such as those reported for Argentina, both in age groups and gender.

Our study showed that frequency of abdominal malignancy was higher than other countries like China or Taiwan. However, our frequency was lesser than in countries in Europe. The reason for this international inconsistency in childhood abdominal cancer incidence is uncertain. By determining the age distribution of abdominal cancer, we can trace the likely period of onset of numerous malignancies, which can provide details about causative factors. Likewise, a child may be more susceptible to environmental exposures because their body parts

are growing rapidly.

LIMITATIONS

This was a single center study with limited number of patients. We need multi center studies to find out exact frequency and burden of abdominal tumors in children.

CONCLUSION

Most common abdominal tumor in children was lymphoma. Neuroblastoma and germ cells tumors were also common. In infants neuroblastoma is the most common tumor.

RECOMMENDATIONS

A National cancer registry is urgently required, for both pediatric abdominal and other malignancies.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

- Kabir M:** Conceptualized and designed the study, literature search, did the statistical analysis ,contributed to the writing of the manuscript
- Uzair M:** Conceptualized and designed the study
- Waheed T:** Review and revise of manuscript
- Hafsa:** Analyzed the data
- Saeed K:** Contributed to the writing of the manuscript
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- Rehman FU:** Review and revise of manuscript

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.