INCIDENCE OF MALIGNANT KIDNEY TUMOURS IN PAEDIATRIC AGE GROUP

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Article Info: Received 24 October 2019; Accepted 28 November. 2019
DOI: https://doi.org/10.32553/ijmbs.v3i12.781
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Conflict of interest: No conflict of interest.

Abstract
Background: Cancer is essentially a disease of adults, yet it is one of the common killers in childhood. In western countries cancer is next only to trauma as a cause of mortality in children under 20 years of age. In India, although infections and malnutrition are the major factors contributing to morbidity and mortality, with the development of preventive and curative measures of treatment, as well as against the malnutrition, malignant tumors in children have become the second biggest killer. In general, the features of malignancies in children differ biologically and histologically from those of adults with respect to incidence, type of tumor, underlying familial or genetic aberration and tendency to regress spontaneously or cytodifferentiate.

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Wilms tumour is by far the most commonest form of malignant kidney tumour in childhood. At one time, it was believed to have a relatively constant incidence throughout the world and was thus proposed as an “index tumour” of childhood. It is seen primarily in infants, 50% of cases before the age of 3 years and 90% before the age of 6 years being 5–10% of cases. Renal cell carcinoma (RCC) makes up 1% of all paediatric renal neoplasm. Renal medullary carcinoma is an aggressive tumour almost exclusively seen in young. Clear cell sarcoma is second most common renal tumour with mean age of diagnosis overlapping with wilms tumour. Primary lymphoma of kidney is extremely rare since kidney has no lymphatic system. Disease involvement is mainly due to hematogenous or direct spread from adjacent lymph nodes.

Common clinical presentations include pain, palpable abdominal mass and hematuria. Other constitutional symptoms are fever, weakness, weight loss and malaise. The best tools currently available for detecting early state renal malignancy are routine investigation, IVP, USG, CT and MRI.
OBJECTIVE

This study is undertaken to evaluate the incidence and morphological features of malignant kidney tumors in children of fifteen years and below.

STUDY PLACE: S.P. Medical College, Bikaner
STUDY DURATION: 2011-2014
STUDY DESIGN: Record based retrospective study
STUDY POPULATION: All renal tumours with study duration
SAMPLE TECHNIQUE: Consecutive sampling
SAMPLE SIZE: All renal tumours with inclusion criteria
INCLUSION: Paediatric patients of age group 0-15 years
EXCLUSION: Patients more than 15 years

PROCEDURE AND SAMPLE COLLECTION:

The material for present study is obtained from S. P. Medical College, Bikaner and referred cases for a period of five years from 2011-2014. The clinical history regarding duration of the disease, mode of presentation, symptoms and signs are recorded from the case papers, request forms, patient’s history, clinical data along with relevant details obtained from available hospital and departmental records. The histopathology slides and paraffin blocks are reviewed. Gross examination is done carefully noting the size, shape, extent and configuration, nodularity, consistency (solid, cystic or mixed). A minimum of 4-5 bits are selected from the representative areas of tumor. The tissue for routine microscopy is preserved and fixed in 10% neutral buffered formalin for 24 hours and processed in automatic tissue processor (Histokinette) and embedded in paraffin. The sections 3-5 μ thick, are cut and stained by haematoxylin and eosin in all cases and special stains like PAS, MTS, and RT done where ever feasible

Data collection and analysis

A pre structured proforma was used to record information regarding demographic data and enter all patient record. Then it was entered into epi info software

Result:

Table 1: Incidence of malignant kidney tumours in children

<table>
<thead>
<tr>
<th>Time period</th>
<th>Total specimens</th>
<th>Paediatric malignant kidney tumours</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 years</td>
<td>60</td>
<td>4</td>
<td>6.66%</td>
</tr>
</tbody>
</table>

Table 2: Distribution of malignant renal tumor according to Sex

<table>
<thead>
<tr>
<th>SEX</th>
<th>NO</th>
<th>TOTAL</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>2</td>
<td>4</td>
<td>50</td>
</tr>
<tr>
<td>FEMALE</td>
<td>2</td>
<td>4</td>
<td>50</td>
</tr>
</tbody>
</table>

Figure 1: Renal cell carcinoma, clear cell type (H&E stain, 4X)

Figure 2: Renal cell carcinoma, clear cell type (H&E stain, 10X)

Figure 3: Renal cell carcinoma, clear cell type (H&E stain, 40X)
Discussion

Present study is conducted in department of pathology, SPMC, Bikaner from 2011-2014 over a period of 3 years. It comprises of total 60 nephrectomy specimens

All these cases are reviewed as regards to incidence, age sex distribution, nature and pattern. The results observed have been compared with similar studies done in India and abroad. Kidney involved in various pathological processes, some of which may require its surgical removal.

Table 3: Comparison of male: female ratio with other study

<table>
<thead>
<tr>
<th>Studies</th>
<th>M/F Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jussawalla et al., Bombay, 1988</td>
<td>1.7</td>
</tr>
<tr>
<td>Das et al., West Bengal, 1994</td>
<td>2</td>
</tr>
<tr>
<td>Nandakumar et al., Bangalore, 1996</td>
<td>1.8</td>
</tr>
<tr>
<td>Bryan et al., Vellore, 2011</td>
<td>4</td>
</tr>
<tr>
<td>Present study</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Table 5: Incidence of paediatric renal neoplasm in various studies

<table>
<thead>
<tr>
<th>Studies</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reddy et al., 2012</td>
<td>8.9%</td>
</tr>
<tr>
<td>Gunes Mustafa et al., 2012</td>
<td>6.02%</td>
</tr>
<tr>
<td>Present study</td>
<td>16.66%</td>
</tr>
</tbody>
</table>

Present study has comparatively high incidence due to less number of patients

Conclusion

The present study provides a fair insight into the histological patterns of lesion in paediatric age group. Most common incidence was that of Wilms tumour in paediatric age group followed by renal cell carcinoma. Imaging and histologic characterization are crucial to avoid any delay in management.

Bibliography

4. C.A. Stiller, D.M. Parkin. International variations in the incidence of childhood renal tumours


