Correspondence

Diagnosis of Enteric Fever in Children: Importance of Relative Granulocytosis

I read with interest the report by Kundu, et al., on diagnosis of enteric fever in children (1). It has been stated that complete blood count in enteric fever is unremarkable and the white blood cell count is normal in most cases and leukocytosis makes the diagnosis less probable. However, it has not been mentioned whether there is a help of relative granulocytosis in the diagnosis of enteric fever or not. Caglar, et al. had reported relative granulocytosis among children with enteric fever(2). Even though relative granulocytosis in children <2 years of age with enteric fever has already been mentioned before(3), all of their patients were older than 3.5 years old, and granulocytosis did not vary, whether the patients were older or younger than 10 years, and leukopenia was present in only half of patients. It was more marked in children who were sick for less than a week. Therefore, in the presence of relative granulocytosis with leukopenia in children with high fever of undetermined origin, enteric fever should be considered.

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Compared to cancers that occur in adults, cancers in children are rare. In developed countries, these comprise only 2% of all cancers while it is 3.0% in developing countries(1). The proportion of childhood cancers relative to all cancers reported by Indian cancer registries varied from 2.1% to 6.2%. Studies of incidence pattern or cumulative risk provide a useful measure of health burden. No study on trends in incidence or risk in childhood cancer was so far reported from India. Some studies from cancer registries of Mumbai and Bangalore and some other studies(2-4) in India reported descriptive epidemiology of some childhood cancers. The present communication attempts report some highlights of temporal trends in childhood cancer cumulative risk from an ongoing study entitled “Exploration of National Cancer Registry Program (NCRP) data and its statistical modeling” of Institute of Cytology and Preventive Oncology, Indian Council of Medical Research (ICMR).

Age-specific cancer incidence rates of childhood period up to the age of 15 years are collected for the years 1982 to 2000 from NCRP reports(5) of ICMR. Cumulative risks are computed by using the formula: Cumulative risk = 100 × [1-exp (–cumulative rate/100)] where cumulative rate = [5 × \(\sum(\text{AspR})\) × 100]/100,000 and AspR is age specific incidence rate. The results obtained are as follows.

The cumulative risk ranges and significant linear trends in risks of childhood cancers during 1982-2000 for various cancer sites are depicted in Table I.
The risks, in terms of one in number of children develop cancer, in different registries for male children are observed to be highest in Delhi with risk of one in 486 to lowest in Barshi with one in 1740. The risk for female children is highest in Chennai with one in 852 to lowest in Barshi with one in 3175. The risk for Luekemias of different types are found to be increasing during the study period in Mumbai and Bhopal while Luekemia unspecified observed a significant decline in Delhi among female children. Non Hodgkins Lymphoma risk is found to have increasing trends in Mumbai and Bhopal among males. There is a declining trend for risk of carcinomas of eye and Luekemia unspecified among male children of Mumbai and Delhi. Bone, Brain and Nervous system and Non Hodgkins Lymphoma risks are found to have increasing trends among females in different registries (Table I). The male to female ratio for magnitude of childhood cancers ranges from 1.1 to 2.5 in different registries. Childhood cancers

<table>
<thead>
<tr>
<th>Childhood cancer site (ICD-10)</th>
<th>Increase/decline trend in cumulative risk (Risk range for 100,000 children)*</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>Bone (C-40-41)</td>
<td>Increase; ( P = 0.005, R^2 = 60.4 ) (Bangalore) [3.0, 8.0]</td>
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<tr>
<td>eye (C-69)</td>
<td>Decline; ( P = 0.026, R^2 = 43.9 ) (Mumbai) [6.0, 2.0]</td>
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<tr>
<td>brain and nervous system (C-70-72)</td>
<td>Increase, ( P = 0.033, R^2 = 41.3 ) (Mumbai) [6.0, 175]</td>
</tr>
<tr>
<td>non Hodgkin’s lymphoma (C-82-83, 96)</td>
<td>Increase ( P = 0.041, R^2 = 68.8 ) (Delhi) [4.0, 10]</td>
</tr>
<tr>
<td>lymphoid leukemia (C-91)</td>
<td>Increase ( P = 0.006, R^2 = 59.3 ) (Chennai) [14, 33]</td>
</tr>
<tr>
<td>myeloid leukemia C=92-94</td>
<td>Increase ( P = 0.037, R^2 = 79.6 ) (Bhopal) [0.0, 6.0]</td>
</tr>
<tr>
<td>leukemia unspecified (C-95)</td>
<td>Increase ( P = 0.047, R^2 = 36.9 ) (Chennai) [0.0, 5.0]</td>
</tr>
<tr>
<td></td>
<td>Decline ( P = 0.033, R^2 = 72.1 ) (Delhi) [8.0, 1.0]</td>
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<tr>
<td>all childhood cancers</td>
<td>Increase ( P = 0.001, R^2 = 70.0 ) (Chennai) [79.0, 117.0]</td>
</tr>
<tr>
<td></td>
<td>Increase ( P = 0.009, R^2 = 54.6 ) (Mumbai) [139, 155]</td>
</tr>
</tbody>
</table>

*Range for the years 1982 to 2000 for Bangalore, Mumbai and Chennai; 1988 to 2000 for the Barshi, Delhi and Bhopal. Positive and negative trends are indicated by “Increase” and “decline” respectively. Blank cell (-) indicate no statistical significance observed in any registry for this childhood cancer site. ICD: International Classification of Disease (Version no. 10)
cancer risk among males is also higher as compared to females.

Delhi reports highest magnitude of risks for males and Chennai for females in all cancers combined during childhood period. Significant increase in trends of childhood cancer risk detected for all sites combined in Chennai for males and in Mumbai for females. The trends observed may likely to give an insight into further understanding of childhood cancer etiology.

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Congenital Malformations: Unexplored Causes

Rates of some congenital malformations in India is one of the highest in the world(1,2). Many studies to prevent the malformations are underway. Apart from consanguineous marriage, infections during pregnancy and folic acid deficiency, history of drugs during pregnancy has been hypothesized as one of the causal factors.

Drug intake during pregnancy include oral contraceptive pills, progesterone analogues to confirm pregnancy, medications for medical ailments and sex selection drugs to bear male offspring(3,4). Effects of sex hormones on fetus have been documented elsewhere. But the studies are based mainly on the exposure of fetus to female sex hormones during the initial period of development.

A preliminary community based study indicates that sex selection drugs contain steroids, and more specifically androgens(5). Limited evidence on exposure of fetus to androgens are obtained from studies conducted on patients suffering form adrenogenital syndrome. In such patients, over-production of androgens leads to partial masculinization of external genitalia and behavior. Although a complete biochemical picture of the sex selection drugs are still unexplored, a theoretical risk might be involved as these are consumed at a time when sexual differentiation takes place at 8-10 weeks of pregnancy.

The fact that pregnant women resort to drugs for having male child represents only the tip of iceberg. It cannot be ignored while discussing strategies to reduce the incidence of congenital malformations in the country.

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