Morbidity and Mortality of Children Hospitalized with Medical Disorders in Afghanistan

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Afghanistan is a developing, thinly populated, land-locked country with an area of 636,266 sq. km and a population of 17 million. There are vast deserts and mountainous regions and a small cultivable area. The economy is largely based on agriculture, livestock and fruit industry. Eighty percent of the population live in about 17,000 villages, many of which are remote and isolated, presenting problems of communication, especially during 3 months in winter when they are snowbound. Fourteen percent are nomadic. Other data indicate a large proportion of low age group population, a high dependency rate of 1 to 27 and an infant mortality rate of 185 per thousand. Modern medical facilities are available in the provincial capitals. Basic health services are provided through primary health centres, one for about 61,000 population. Thirty-three percent have access to safe water. Sanitary and hygienic conditions are generally unsatisfactory.

Very little information is available regarding the pattern of morbidity and mortality in children in Afghanistan. Such data are provided in this report which is based on the analysis of cases admitted to the Institute of Child Health over a period of 3 years.

Patients and Methods

The Institute of Child Health was established in 1972 at the capital city of Kabul (population approximately 1 million). It has 130 hospital beds for inpatients; 80 for patients with medical disorders and infectious diseases and 50 for various surgical disciplines. The hospital admits patients from Kabul and its suburbs and serves as a referral centre for patients from the provinces. Due to a shortage of inpatient accommodation, however, only seriously ill patients are admitted, e.g. acute gastroenteritis with dehydration requiring intravenous fluids, severe respiratory disease needing oxygen therapy, meningitis, etc. The Institute is also a centre for postgraduate training in different fields of pediatrics for medical and paramedical staff.

Records of all patients hospitalized during 1973 and 1975 were examined. Data available in all cases included age, sex, weight, clinical and laboratory evaluation, final diagnosis and the outcome. Wherever a patient had more than one disease, the condition considered to contribute most to the illness was regarded as the primary diagnosis.

Observations

Over a period of three years, 17,500 patients were admitted of whom 15,506 were in the various medical wards.

Age and Sex Distribution

Seventy percent of the patients were below the age of 5 years and 40% below 2 years. Of the under-5 age group, 70% were below 2 years. The number of children in the 1st and 2nd year groups was almost equal. Males dominated in all age groups constituting 60% of all.

Morbidity Pattern

Table 2 shows the primary diseases in relation to the age. Patients with gastroenteritis and respiratory infections together accounted for 50% of all admissions. Next in order of frequency were malnutrition (3.7%), tuberculosis including tuberculosis meningitis (3.5%), diphtheria, pertussis and tetanus (2.9%), amoebic and bacillary dysentery (2.2%), and typhoid (2.2%). Helminthic and other parasitic infections were seldom recorded as the primary conditions. Routine stool examinations showed ascariasis in 61% and giardiasis in 11%.

Table 2 also relates the diseases with different age groups. Forty-five percent of admissions in patients below the age of 2 years were due to acute...
were also associated with high death rates. It was highest in the neonatal period (26.5%). Patients between 1 month and 2 years accounted for 42.5% of the total mortality. The proportionately high mortality from respiratory infections was high in infants below 1 month (22%) and in the latter part of first year (24%); subsequently it ranged between 13–15% in patients between 1 to 8 years.

Malnutrition, invariably severe, was the primary diagnosis in 3.7% of the patients and an associated feature in another 7.5% of the patients, mostly admitted with serious infections, which included gastroenteritis (35.8%), respiratory infections (12.7%), acute amoebic dysentery (22.5%) and bacillary dysentery (8.2%). The incidence of malnutrition was 12.5% in patients below the age of 5 years. The analysis of weight pattern of all children with primary and secondary diagnosis of malnutrition showed that 84% weighed less than 60% of the Harvard mean.

Mortality Pattern

Table 3 shows the main causes of death. The overall mortality was 7.2%. Acute gastroenteritis and respiratory infections accounted for 62.7% of all deaths. The proportionately high mortality from pyogenic meningitis, neonatal sepsis and malignancies is evident. The mortality from acute respiratory infections (10%) was almost twice as that from gastroenteritis. Malnutrition, diphtheria and tetanus were also associated with high death rates.

The mortality rates in different age groups are shown in Table 1. It was highest in the neonatal period (26.5%). Patients between 1 month and 2 years accounted for 42.5% of the total mortality. The death rate continued to be high during third and fourth years, forming 25% of the total mortality.

Fifty-two percent of all deaths occurred within 48 hours of admission (Table 3).

Discussion

Our data on the pattern of mortality and morbidity are hospital-based and cannot be claimed to represent the epidemiology of the entire community, especially since health care facilities are not uniformly distributed. They would nevertheless be expected to reflect the pattern of serious illness in children and the ensuing mortality.

The pre-eminence of acute gastroenteritis and respiratory infections as the leading causes for hospital admissions is evident. A similar picture has been observed in other developing countries.1,2 In our patients acute gastroenteritis was mainly seen in those below the age of 5 years and despite fluid therapy and supportive care, it was associated with considerable mortality. Gastroenteritis and other enteric infections are closely related to poor sanitary and hygienic conditions, and much of the morbidity would be expected to be preventable. Experience in several countries indicates that oral glucose electrolyte solutions if given in the early stages of the disease, help to reduce the incidence of mortality.3 Health education regarding hygienic measures and protection of food from flies, which profusely multiplied in summer, should also play an important role in prevention.

Acute respiratory infections, mainly bronchopneumonia and bronchiolitis, take a heavy toll in winter months, particularly in infants and small children with associated malnutrition.4 An important factor contributing to the high mortality in our patients was their late arrival at the hospital and inadequate facilities for the management of respiratory failure simultaneously in a number of patients.

The relatively small number of patients with malnutrition is explained by the fact that only...
Table 2
Morbidity, Main Causes

<table>
<thead>
<tr>
<th>Primary diagnosis</th>
<th>0-4 weeks</th>
<th>1-11 months</th>
<th>1-2 years</th>
<th>2-3 years</th>
<th>3-4 years</th>
<th>4-5 years</th>
<th>5-8 years</th>
<th>8-11 years</th>
<th>11-14 years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastroenteritis</td>
<td>69 (13.5)</td>
<td>2026 (57.4)</td>
<td>1805 (55.4)</td>
<td>667 (34.2)</td>
<td>245 (24.0)</td>
<td>97 (13.6)</td>
<td>251 (13.1)</td>
<td>113 (7.3)</td>
<td>57 (5.2)</td>
<td>5330</td>
</tr>
<tr>
<td>Acute respiratory infection</td>
<td>108 (21.8)</td>
<td>2747 (50.4)</td>
<td>519 (15.9)</td>
<td>320 (16.4)</td>
<td>181 (17.7)</td>
<td>117 (16.4)</td>
<td>250 (13.0)</td>
<td>129 (8.3)</td>
<td>93 (8.5)</td>
<td>2564</td>
</tr>
<tr>
<td>CNS infection*</td>
<td>4 (0.8)</td>
<td>57 (1.6)</td>
<td>43 (1.3)</td>
<td>44 (2.3)</td>
<td>38 (3.7)</td>
<td>30 (4.2)</td>
<td>66 (3.4)</td>
<td>51 (3.3)</td>
<td>35 (3.2)</td>
<td>368</td>
</tr>
<tr>
<td>DPT †</td>
<td>13 (2.6)</td>
<td>35 (1.0)</td>
<td>56 (1.7)</td>
<td>31 (1.5)</td>
<td>36 (3.5)</td>
<td>37 (5.2)</td>
<td>120 (6.2)</td>
<td>92 (5.9)</td>
<td>42 (3.8)</td>
<td>462</td>
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<tr>
<td>Neonatal sepsis</td>
<td>157 (31.7)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>157</td>
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<tr>
<td>Haematological disorders</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malnutrition</td>
<td>4 (0.8)</td>
<td>106 (3.0)</td>
<td>173 (5.3)</td>
<td>159 (8.1)</td>
<td>59 (7.7)</td>
<td>27 (3.8)</td>
<td>30 (1.5)</td>
<td>16 (1.0)</td>
<td>10 (0.9)</td>
<td>581</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>15 (0.5)</td>
<td>39 (1.2)</td>
<td>38 (1.9)</td>
<td>34 (3.3)</td>
<td>30 (4.2)</td>
<td>156 (8.1)</td>
<td>131 (8.4)</td>
<td>110 (10.0)</td>
<td>554</td>
<td></td>
</tr>
<tr>
<td>Malformation</td>
<td>66 (13.4)</td>
<td>54 (1.5)</td>
<td>56 (1.7)</td>
<td>31 (1.5)</td>
<td>22 (2.2)</td>
<td>18 (2.5)</td>
<td>61 (3.1)</td>
<td>44 (2.8)</td>
<td>15 (1.3)</td>
<td>367</td>
</tr>
<tr>
<td>Bacillary and amoeba dysentery</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Typhoid</td>
<td>1</td>
<td>38 (1.0)</td>
<td>92 (2.8)</td>
<td>68 (3.4)</td>
<td>27 (2.6)</td>
<td>34 (4.7)</td>
<td>50 (2.6)</td>
<td>34 (2.2)</td>
<td>19 (1.7)</td>
<td>365</td>
</tr>
<tr>
<td>Measles</td>
<td>36 (1.0)</td>
<td>36 (1.1)</td>
<td>37 (1.9)</td>
<td>23 (2.4)</td>
<td>14 (1.9)</td>
<td>23 (1.2)</td>
<td>9 (0.5)</td>
<td>7 (0.6)</td>
<td>7 (0.6)</td>
<td>185</td>
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<tr>
<td>Cardiovascular disease</td>
<td>9 (1.8)</td>
<td>12 (0.4)</td>
<td>11 (0.3)</td>
<td>5 (0.3)</td>
<td>10 (0.9)</td>
<td>10 (1.4)</td>
<td>35 (1.8)</td>
<td>69 (4.4)</td>
<td>69 (6.3)</td>
<td>230</td>
</tr>
<tr>
<td>Acute nephritis and nephrosis</td>
<td></td>
<td>1</td>
<td>4 (0.1)</td>
<td>6 (0.3)</td>
<td>13 (1.2)</td>
<td>22 (3.0)</td>
<td>43 (2.2)</td>
<td>35 (2.3)</td>
<td>37 (3.4)</td>
<td>161</td>
</tr>
<tr>
<td>Neoplasm</td>
<td>6 (1.2)</td>
<td>17 (0.5)</td>
<td>6 (0.2)</td>
<td>12 (0.6)</td>
<td>12 (1.1)</td>
<td>4 (0.5)</td>
<td>21 (1.1)</td>
<td>30 (1.9)</td>
<td>29 (2.6)</td>
<td>137</td>
</tr>
<tr>
<td>Cirrhosis</td>
<td></td>
<td>10 (0.3)</td>
<td>5 (0.2)</td>
<td>13 (0.7)</td>
<td>8 (0.7)</td>
<td>14 (1.9)</td>
<td>28 (1.5)</td>
<td>19 (1.2)</td>
<td>13 (1.2)</td>
<td>110</td>
</tr>
<tr>
<td>Total</td>
<td>439 (87.6)</td>
<td>3284 (63.1)</td>
<td>2889 (88.6)</td>
<td>1481 (75.6)</td>
<td>749 (72.7)</td>
<td>499 (70.3)</td>
<td>1311 (68.0)</td>
<td>922 (59.1)</td>
<td>631 (57.3)</td>
<td>12205</td>
</tr>
</tbody>
</table>

* Pyogenic meningitis Encephalitis. † Diphtheria, pertussis, tetanus.
severely affected ones were admitted, because of lack of beds particularly during summer months. Although prolonged breast feeding is traditionally practised in Afghanistan, and wheat bread is freely and cheaply available (subsidized by the Government), malnutrition in small children is quite frequent. The chief contributing factors include recurrent gastrointestinal and other infections and intestinal parasitic infections, which are extremely common, and a lack of knowledge of the dietary needs for small children. The practice of withholding food during common infections is widely observed. Adequate medical facilities for interference to break the vicious infection—malnutrition circle are not available in the villages. 4

The high morbidity from diphtheria, pertussis and tetanus reflects the low immunization status of the community. Majority of the patients with tetanus were neonates, while diphtheria was observed in older children. The lesser number of patients with measles is due to the fact that only those with serious complications were admitted. 1, 2

Neonatal sepsis is usually associated with a high mortality, unless early detection, bacteriologic diagnosis and appropriate management under intensive care conditions is possible. 3 In this country, survival of a newborn baby is still regarded as a small miracle, especially in the villages. It is reasonable to assume that a large number of newborns succumb before receiving any medical care.

Mortality in our patients below the age of 5 years accounted for 80% of all. The greater vulnerability of the under-5 age group to infections and malnutrition is well recognized. 6 Experience in western countries indicates that the incidence of diarrhoea—pneumonia complex is brought down by improvement in socio-economic and environmental conditions, without necessitating application of antimicrobial drugs and sophisticated medical care. 8 A large proportion of the country’s health budget is spent on the hospitals for the treatment of essentially preventable conditions, which have a high recurrence rate. Some of the measures which can be effective in reduction of the common childhood diseases include provision of safe water, immunizations, health education 9 especially directed towards personal and environmental hygiene, nutrition and child spacing, and provision of relevant medical facilities.

### Summary

Over a 3-year period, 15,506 children were admitted to medical wards of the Institute of Child Health, at Kabul, Afghanistan. Sixty percent were boys. Seventy percent were below 5 years and 40% below 2 years. Patients with gastroenteritis and respiratory infections made up 50% of all admissions. Next in order of frequency were malnutrition, tuberculosis, diphtheria, tetanus and dysentery. Fifty percent of stools tested showed ascariasis and 17% amebiasis. Fifty-five percent of the patients between 1 month to 2 years had acute gastroenteritis, mainly during summer. The overall mortality was 7.2%, being 5.1% in gastroenteritis and 10% in respiratory infections. Patients between 1 month to 2 years accounted for 42.5% of the mortality and those between 2–4 years 25%. Fifty-two percent of all deaths occurred within 48 hours of admission. The observations bring out the importance of gastrointestinal and respiratory infections and the vulnerability of the under-5 age group. The need for health education, immunization and provision of safe water is evident.

### References