A STATISTICAL NOTE ON GASTRO-INTESTINAL DISORDERS IN INFANTS

BY

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During the preparation of the Alder Hey Hospital Annual Report for the year 1937 the case records of 1,993 children under one year of age were classified, and those of 539 in the group of gastro-intestinal disorders analysed in detail. The figures obtained are published in the hope that they will prove of use or interest to others undertaking a similar statistical survey.

1,993 children under one year of age were treated in the hospital during the year 1937 (January to December inclusive). They were classified into nine groups:

I. GASTRO-INTESTINAL DISORDERS .......................... 539 cases
II. RESPIRATORY DISORDERS ............................. 643 "
III. PREMATURITY ........................................... 33 "
IV. CONGENITAL ABNORMALITIES ......................... 53 "
V. CONGENITAL PYLORIC STENOSIS ....................... 15 "
VI. OTITIS AND MASTOIDITIS ............................ 197 "
VII. SURGICAL CONDITIONS .............................. 241 "
VIII. INFECTIOUS DISEASES ............................... 105 "
IX. OTHER DISEASES ....................................... 167 "

1,993 "

Group I, the group under discussion, included feeding difficulties (under- and over-feeding, failure to gain weight, maternal mismanagement), constipation, diarrhoea, minor gastric upsets following vaccination, chill and teething, stomatitis and sore buttocks. The feeding histories of patients in this group were carefully scrutinized: 14 per cent. were inadequately noted and were not classified. The diet of 45 per cent. was highly unsatisfactory in quantity or quality or both, while that of the remainder (41 per cent.) was passed as satisfactory in these respects. In few cases, however, were extra vitamins given. As the figures quoted represent only gross errors in the diet, the impression was gained that the feeding of infants in this class of hospital patient, many being the children of unemployed parents, is most inadequate and urgently in need of supervision. The commonest faults were lack of sufficient protein and the feeding of a too dilute mixture (i.e. of low calorie value) usually in too large amount. As has been said before, vitamin deficiencies in the diet were almost constant.

The state of nutrition was correspondingly poor. The weight was not
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recorded in 6 per cent. of cases, either because the child was too ill to be weighed or because it was over the age of nine months, after which the weight record is not kept as a strict routine. The remaining 94 per cent. were divided into three groups:

Athreptic (more than 40 per cent. under expected weight)  15 per cent.
Hypothreptic (20–40 per cent. under expected weight)  . 34 ”
Satisfactory (within 20 per cent. of expected weight)  . 45 ”

Few of those infants classed as satisfactory were of ideal weight, most of the weights tending to be low.

The commonest symptom in this group of cases was diarrhoea. In mild form it accompanied most of the dyspepsias and feeding difficulties, but in 281 cases it was sufficiently severe to dominate the picture. In these cases of diarrhoea, with or without vomiting, the diagnosis of gastro-enteritis was reserved for those with a true enteral infection. Fifty-nine patients (22 per cent.) showed the clinical picture of ‘summer diarrhoea,’ some cases being fulminating, the remainder of varying degrees of severity. Epidemic features were not constant, but were present in a large proportion of these cases classed as true enteral infections. No light was thrown on the bacteriology of the condition. Cultures from the faeces yielded:

<table>
<thead>
<tr>
<th>No pathogenic organisms</th>
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<th>.</th>
<th>.</th>
<th>.</th>
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<th>38 cases</th>
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</thead>
<tbody>
<tr>
<td>Bacillus of Morgan</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>15 ”</td>
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<tr>
<td>Bacillus Proteus</td>
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<td>.</td>
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<td>4 ”</td>
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<tr>
<td>Bacillus paratyphosus B</td>
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<td>.</td>
<td>.</td>
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<td>1 case</td>
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<td>Bacillus Aertrycke</td>
<td>.</td>
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</table>

The death-rate in this group was 42 per cent.

One hundred and eighty-nine (67 per cent.) cases of diarrhoea were associated with parenteral infections and other disorders as follows:

<table>
<thead>
<tr>
<th>Otitis media and mastoiditis</th>
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<th>.</th>
<th>.</th>
<th>.</th>
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<th>111 cases</th>
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<tbody>
<tr>
<td>Nasopharyngitis</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
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<td>25 ”</td>
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<td>Pulmonary infections</td>
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<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>25 ”</td>
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<td>Pyelitis</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
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<td>8 ”</td>
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<td>Teething</td>
<td>.</td>
<td>.</td>
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<td>4 ”</td>
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<td>Rickets</td>
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<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>2 ”</td>
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<td>A mixed group (such as skin lesions)</td>
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<td>.</td>
<td>.</td>
<td>.</td>
<td>14 ”</td>
<td></td>
</tr>
</tbody>
</table>

The death-rate in this group was 50 per cent., but more than three-quarters of these deaths were judged to be due to infections of the middle ear and mastoid. The remaining thirty-three cases (11 per cent.) of severe diarrhoea were thought to be due to primary nutritional disorders.

Discussion

From these figures it appears that the number of cases of true gastro-enteritis is small in comparison with the total number of cases showing a similar clinical picture (in this series 59 : 281). The conviction was produced that the more thorough is the search for a source of infection, the more frequently it will be found to be responsible for the illness of these children. Of 189 cases of parenteral diarrhoea only forty-one were readily diagnosed as such by ordinary
clinical examination in the admission room. The frequency of otitis media and mastoiditis, often latent, as a cause of persistent diarrhoea was well demonstrated. Successful treatment of the local condition resulted in prompt improvement of the general state and amelioration of diarrhoea, but of 111 cases of otitis with the enteritis syndrome, seventy-five died. Post-mortem findings of pus and diseased bone confirmed the diagnosis.

The effect of weight and nutrition on the incidence of this severe toxic type of ear disease was not striking. Forty-seven of the 111 cases were of satisfactory weight, forty-eight being hypothreptic and sixteen athreptic. All except one of the athreptic babies died, but the condition was almost equally lethal in the other two groups. Operative treatment of these toxic babies with 'mastoiditis occulta' and severe diarrhoea was undertaken in three cases only, two of whom died. From a previous series of cases treated in this hospital (McConkey and Couper, 1938) the conclusion was drawn that operative interference, apart from paracentesis of the tympanic membrane, did not improve the prognosis. The treatment adopted was that directed toward replacement of tissue fluids and relief of tension in the middle ear. On the other hand, eleven cases of mastoiditis in infants without diarrhoea were operated upon, ten of whom recovered.

The position of the breast-fed baby appears, from these as from all other findings, to be a much safer one than that of the artificially-fed infant. Of 118 babies who died with the enteritis syndrome, ten were breast-fed. Two of these appeared to be cases of true enteral infection, one with the bacillus paratyphosus B. Both were under six months of age, so that the likelihood of mixed feeding was small, and both were said to be entirely breast-fed. The other eight were cases of parenteral diarrhoea.

Summary

1. A statistical survey is reported of cases commonly known as gastro-enteritis, treated in the Alder Hey Hospital during the year January–December, 1937.
2. The presence of a latent infection is suggested as the cause of the condition in a large number of cases.
3. The incidence of true 'summer diarrhoea' is comparatively low.
4. The diets of infants under one year were found to be, in general, highly unsatisfactory.

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Reference

A statistical note on gastro-intestinal disorders in infants

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