The pathogenesis of anaemia in hyperendemic malaria is discussed.

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Medical Memoranda

Outbreak of Dysentery Caused by *Shigella boydii* 4

In Britain dysentery is almost entirely caused by *Shigella sonnei* and only a small amount by *Sh. flexneri*, but from time to time outbreaks are associated with the more unusual shigella types; this communication describes one such outbreak, the cause of which was found to be *Sh. boydii* 4. In a personal communication Dr. K. Patricia Carpenter, of the Dysentery Reference Laboratory, Colindale, states that the *Sh. boydii* subgroup is not indigenous to Britain, and infections caused by the various Boyd types are always "imported"—that is, either the patient himself or a contact has been infected outside this country. Over a nine-year period, up to 1958, the records of the Dysentery Reference Laboratory show that only 37 *Sh. boydii* strains are known to have been isolated in Britain, and of these only 2 were *Sh. boydii* 4 (P274); both these organisms came from patients known to have been infected abroad. An outbreak of dysentery in this country caused by *Sh. boydii* 4 is therefore noteworthy.

CLINICAL NOTES

In May, 1958, seven children, all from one family and all below the age of 9 years, were admitted to an infectious diseases hospital near Glasgow, suffering from what was described as mild dysentery; their parents are reported as not being affected. On admission the children were found to have mild diarrhoea, with no blood or mucus in the stools, and no fever; no chemotherapeutic treatment was given, and after two weeks in hospital they were discharged home. During their stay in hospital, bacteriological examination of faecal specimens revealed that all the children were excreting an organism which behaved biochemically like a shigella, but which was not one of the serotypes commonly found in this area (*Sh. sonnei*, *Sh. flexneri* 1, 2, and 3, and X variants). A few days after the seven children had been discharged home, their maternal uncle and his two children, aged 4½ and 2½ years, were

admitted to hospital suffering from dysentery. From the faeces of these three were isolated organisms which appeared to be the same as those obtained from the seven children. These three patients were well within a few days, and were discharged home seven days after entering hospital.

BACTERIOLOGICAL FINDINGS

The 10 strains isolated appeared to be identical—two were selected for detailed examination; one was from one of the seven children first admitted to hospital and the other from their uncle. Both produced identical biochemical reactions—namely, acid without gas was formed from glucose and mannitol within 24 hours; from sorbitol and rhamnose a faint acid reaction was produced after three days, while maltose showed a slight acid reaction after 15 days: the tests for motility, indole, H₂S formation, citrate utilization, gelatin liquefaction, and urease formation were all negative; the Voges-Proskauer test was negative and the methyl-red test was positive. After 30 days' incubation negative reactions were obtained with lactose, sucrose, inositol, raffinose, xylose, galactose, dulcitol, salicin, and adonitol.

Slide-agglutination tests with the two strains under investigation against all the shigella antisera issued by the Standards Laboratory showed positive results with a polyvalent *Sh. boydii* serum (serotypes 1-7), *Sh. boydii* 4, and *Sh. boydii* 1. Tube-agglutination tests with these antisera produced full titre agglutination with the polyvalent *boydii* and the individual *Sh. boydii* 4 sera, but agglutination to only a titre of 1/10 with *Sh. boydii* 1. (Dr. Carpenter states that this agglutination with *Sh. boydii* 1 is almost certainly due to minor alkalescens-dispar group relationships.) Rabbit antisera to the two strains under test were prepared using boiled vaccines. Both sera gave a titre of 1:6,400 against boiled suspensions of the homologous strain, the heterologous strain, and also a known strain of *Sh. boydii* 4 (NCTC 8214). Reciprocal and mirror absorption tests showed that both strains were identical with each other and with a classical *Sh. boydii* 4. These findings were subsequently confirmed by the Dysentery Reference Laboratory at Colindale.

COMMENT

In view of what was known about the occurrence of *Sh. boydii* 4 in this country, inquiries were made to discover if the present outbreak had a foreign source: it was learned that the children's uncle, the only adult patient, was in fact a native of Estonia, making frequent trips to this country in his capacity as a seaman. It seems reasonable to suppose that he was the vehicle by which the organism was transmitted to the children, but, as he visited several Continental ports shortly before the outbreak developed, it is impossible to be certain of the exact location of origin of the infection. It is of interest that the outbreak produced only very mild symptoms, requiring practically no treatment, and that a careful follow-up by public-health authorities showed that the infection did not extend beyond family limits.

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