ISOLATION OF SALMONELLA FROM UNUSUAL SITES IN THE BODY

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SUMMARY

During the period 1971–1982, 57 salmonella strains other than S. typhi *and* S. paratyphi *were isolated from sites other than stools and blood. Cerebrospinal fluid was the commonest specimen followed by urine and pus. The commonest serotypes of the 22 encountered were* S. typhimurium *and* S. enteritidis. *Twenty-four of the 57 patients were children under one year of age. These findings highlight the need to remember the unusual manifestation of salmonellosis in differential diagnoses.*

INTRODUCTION

Salmonella serotypes other than the typhoid and paratyphoid bacilli are primarily parasites of animals and when they infect man, they are usually confined to the gastrointestinal tract where they may cause gastroenteritis.

Under certain circumstances however, they may cause illnesses other than gastroenteritis, and bacteriological examination of such cases may result in the isolation of salmonella from other sites of the body. A review of the literature gives many instances of this and isolation from sites such as abscesses,[1] meninges,[2] synovial fluid,[3] breast discharge[4] and anterior chamber of the eye[5] have been reported.

These remote infections presumably result from invasion of the blood stream from the primary gastrointestinal location.

The purpose of this paper is to present the relative frequency of such occurrences in this country and to provide some information on the serotypes involved and some features of the patients affected.

Accordingly the records of serotyping activity in the bacteriology division for the 12-year period from 1971 to 1982 were reviewed to ascertain the number of such isolations.

MATERIALS AND METHODS

During the period 1971–1982, a total of 57 salmonella isolates (other than *S. typhi* and *S. paratyphi)* were obtained from sites other than stool and blood. During the same period the total number of salmonella strains encountered was 8,213. This gives a percentage of 0.7% for isolates from unusual sites.

RESULTS

Table I lists out the different serotypes of salmonella encountered their respective numbers and the type of clinical specimens from which they were derived.

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TABLE I
SEROTYPES OF SALMONELLA ISOLATED FROM UNUSUAL SITES IN THE BODY

Serotype	Group		Specimen								
			CSF	Urine	Pus	Eye swab	High vaginal swab	Subdural tap	Pleural fluid	Tracheal aspirate	Other
S. typhimurium	B	14	4	5	3	–	1	–	1	–	–
S. enteritidis	D_1	10	8	–	–	–	–	1	–	–	1
S. paratyphi B	B	4	2	2	–	–	–	–	–	–	–
S. javiana	D_1	3	2	–	1	–	–	–	–	–	–
S. paratyphi A	A	2	–	2	–	–	–	–	–	–	–
S. bovismorbificans	C_2	2	–	2	–	–	–	–	–	–	–
S. derby	B	2	1	–	1	–	–	–	–	–	–
S. weltevreden	E_1	2	–	2	–	–	–	–	–	–	–
S. stanley	B	2	1	–	–	–	–	–	–	1	–
S. heidelberg	B	2	2	–	–	–	–	–	–	–	–
S. blockley	C_2	2	–	–	–	–	–	–	–	–	2
S. krefeld	E_4	2	–	–	1	1	–	–	–	–	–
S. enteritidis var chaco	D_1	1	1	–	–	–	–	–	–	–	–
S. reading	B	1	1	–	–	–	–	–	–	–	–
S. lexington	E_1	1	–	1	–	–	–	–	–	–	–
S. raus	G_1	1	–	1	–	–	–	–	–	–	–
S. infantis	C_1	1	1	–	–	–	–	–	–	–	–
S. pollorum	D_1	1	1	–	–	–	–	–	–	–	–
S. give	E_1	1	1	–	–	–	–	–	–	–	–
S. oslo	C_1	1	1	–	–	–	–	–	–	–	–
S. anatum	C_1	1	–	1	–	–	–	–	–	–	–
S. typhimurium var copenhagen	B	1	–	–	1	–	–	–	–	–	–
Total			**26**	**16**	**6**	**1**	**1**	**1**	**1**	**1**	**3**

Cerebrospinal fluid was the commonest specimen followed by urine and pus. The other specimens produced only one isolate each.

The commonest serotypes of the 22 encountered were *S. typhimurium* and *S. enteritidis*. While *S. typhimurium* was almost equally obtained from cerebrospinal fluid, urine and pus, *S. enteritidis* was predominantly from the cerebrospinal fluid.

28 of the patients from whom the isolates were obtained were females while 26 were males. The sexes of three patients were not recorded on the forms. 19 of the patients were Malays, 19 Chinese and 16 Indians. The ethnic origins of three patients were not recorded.

24 of the 57 patients were less than one-year-old. The other patients were scattered in a wide range of age groups from one year to 75 years.

DISCUSSION

The incidence of extraintestinal or 'remote' salmonellosis in this country though small (0.7% of all salmonella isolations) should highlight the necessity to keep this in mind in the different diagnosis.

This may not always be apparent as these salmonella infections may be remote not only in location but also in time from the original gastro-intestinal episode. Many of the salmonella serotypes which have a propensity for hematogenous spread generally give very mild or asymptomatic gastro-intestinal infection. When these organisms implant in remote sites, they may remain dormant for months or even years before manifesting themselves as a localised infectious process.[1]

In our series meningitis was by far the commonest example of such extraintestinal manifestations and

in this case it is likely that these episodes followed closely the initial infection. Furthermore, cases of meningitis generally have cultures of the cerebrospinal fluids done early as a routine and this may also explain the preponderance of cerebrospinal fluids among specimens from which salmonella are isolated.

The two commonest serotypes encountered in these salmonella meningitis cases were *S. typhimurium* and *S. enteritidis.* This same picture was seen in as far away a place as Dakar in Senegal where there were 50 salmonella infections among 3,658 cases of meningitis.[2]

Almost half the patients in our series were less than one year old. This predilection for the younger age groups is in keeping with the findings of others.[2,6,7]

This age group would therefore constitute a vulnerable group as would adults who have underlying diseases or are subject to factors that suppress host resistance.

The isolation of salmonella from sites other than stools and blood, although constituting a small proportion of all salmonella isolations draws attention to the need to consider the possibility of salmonellosis particularly in childhood meningitis and in some other unusual infections.

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