AN OUTBREAK OF INFECTION DUE TO SALM. TYPHI-MURIUM

BY

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In view of the possibility of similar outbreaks of infection it is felt that a short preliminary description of this epidemic is justified at this stage, although the investigation is not yet complete in full detail.

On Thursday, July 4, three cases of acute gastro-enteritis were notified in the Witham Urban District. There were a further twelve cases on the Friday, and a large number of cases on the Saturday, Sunday, and Monday, giving the classical picture of an explosive outbreak.

Clinical Findings

The clinical picture of the disease was constant. Headache was a prominent early symptom, and pyrexia was also present. At the onset there was intermittent epigastric pain, associated with nausea or vomiting, and followed some two to three hours later by diarrhoea. This would last in severe cases for as long as three days or more, and be accompanied by prostration. In milder cases the pain might resemble that of a dyspepsia and be followed by a few loose bowel actions. The presence of blood was more common in children than in adults. In many of the mild cases a more severe recurrence appeared seven days after the primary symptoms.

Information was difficult to obtain in the early stages of the epidemic. Only the more severe cases were notified, while those patients with mild attacks were regarded as suffering from merely the usual upsets which are liable to occur at this time of the year. Many of those affected did not seek medical advice at all. A further complication lay in the fact that many practitioners did not know that such cases can be notified, and for these reasons the existence of an epidemic was not realized in some districts until it had been present for a considerable time. In Witham, however, its presence was rapidly appreciated, owing to the fact that all the local doctors are in partnership, and one of them is the acting Medical Officer of Health.

An analysis of all the available data as to food consumed by the infected persons showed the only common factor to be the meat supply. The slaughter-house distributing meat was in Witham itself, and this rendered the investigation considerably easier. The raw meat ration for the infected area and also tinned meat were supplied by this slaughter-house to the retail butchers.

Bacteriological Investigation

Bacteriological investigation of the faeces of those infected showed *Salmonella typhi-murium* in all specimens. Cases were soon identified among the employees of the retail meat distributors, and, as was to be expected, secondary cases rapidly arose from this source. Although the exact origin of the infection is still under investigation, certain possible sources of spread have been identified. Measures for the control of the epidemic have been based upon this data.

The tinned meat was found to be uninfected in the tins but to be infected in the butcher's shop. As the distribution was from a common source, the raw meat appears to have been the infectious agent. Raw meat, however, would be cooked before consumption, and although it is recognized that cooking does not always destroy this organism, it seems unlikely that inadequate cooking could have been the cause of so many cases. It seems more probable that the spread was due to contamination of the tinned meat, after opening, by the raw meat. This could have followed contact on the butcher's slabs, infection of the slabs themselves, infection of the knives, cleavers, and other cutting instruments, infection of the workers' hands, and contact in parcelling. It seems likely that all these factors played a part. At the same time, once the retail distributors became infected themselves they would be in a position to re-infect further cooked food.

Control therefore took the form of:

1. Removing any source of infection from the slaughter-house.
2. Cleaning of all slabs, containers, and knives in the retail establishments.
3. Tightening up generally the hygiene of food-handlers, with stress on the desirability of careful washing of the hands, particularly after using the w.c.
4. Circularization of all retailers on the importance of early recognition of symptoms among their workers, and of cessation of work by all doubtful cases or contacts.
5. A recommendation that cooked meat should be packed independently of raw meat.
6. Circularization of medical practitioners informing them about the epidemic, and about the measures being taken, together with a request for their co-operation, particularly with regard to notification.

As a result of these measures, the number of cases appears to have abated, although secondary cases may be expected to continue. Full appreciation should be recorded of the efforts of Dr. T. G. Benjamin and Dr. J. G. Denholme of Witham, and of the work done by Mr. E. Wadhams, the sanitary inspector. Dr. Ross Mackenzie, pathologist at the Essex County Hospital, Black Notley, was responsible for all the bacteriological investigations. Dr. W. A. Bullough, County Medical Officer of Health, placed the full resources of his department at our disposal.

Two Important Points

This outbreak of food-poisoning due to an organism of the *Salmonella* group involved a combination of circumstances the most important of which was the presence of the organism at a central point for food distribution during a spell of hot weather. Nevertheless, it once again draws attention to certain basic principles of hygiene.

Advice about washing the hands after using the w.c. is often repeated but rarely heeded. The risk of infection of cooked food by assistants in the distributing shops should be negligible if this elementary precaution is carried out; and this also applies to case-to-case infection in private houses.

Countless investigations have shown this route to be the source of infection in similar outbreaks. Yet it appears that the public still do not appreciate this very real danger. In some schools notices are posted on the lavatory doors reminding the users to wash their hands. If the public generally could be fully educated on this point, gastro-intestinal infections, which are becoming more and more prevalent, could be considerably curtailed.

Fortunately, up till now most of these outbreaks have been mild, from a clinical point of view, but this has led to the acceptance of attacks of diarrhoea as being quite an ordinary event. Patients fail to seek medical advice, and practitioners fail to notify such cases as they do come across. It is not generally realized that attacks of this kind associated with food are notifiable under the Food and Drugs Act. There is a real danger in this attitude of mind on the part of both patients and doctors. Once an outbreak is allowed to gain momentum it is almost impossible to control it, whereas if it is caught early it can often be cut short. It should be appreciated that all such outbreaks are not necessarily mild clinically, and an uncontrolled epidemic of a more serious nature might well be a major catastrophe.

The work of the Red Cross and St. John Hospital Library, which during the war distributed more than four million books to Service patients, has been reorganized for peace-time work as a department of St. John and Red Cross. It has now moved to new headquarters, 40, William IV Street, Trafalgar Square, W.C.2, and is extending and developing its activities in all Service hospitals, both at home and over-seas, and in civilian hospitals, and kindred institutions in England, Wales, and Northern Ireland. While the hospital library department will continue to provide books by direct gift to form the nucleus of any new hospital library or to restock any existing one, a special feature will be the loan libraries. These will provide an individual service for patients requiring special technical, foreign, or books difficult to obtain. One of these technical libraries will be solely available for tuberculous patients in sanatoria, and the books will be kept in a room apart from other books and will go only to and from the sanatoria.