THE TYPHOID GROUP OF FEVERS.*

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These are a group of fevers caused by the organisms 1. *Bacillus typhosus:* 2. *B. paratyphosus A:* 3. *B. paratyphosus B:* 4. *B. paratyphosus C.* The first fever, that caused by *B. typhosus*, is the most serious and is the disease commonly known as "typhoid" or "enteric."

Typhoid fever is an illness characterised by severe, prolonged pyrexia, which commences gradually, causes great weakness and drowsiness, produces tenderness and swelling of the abdomen and a rash, and subsides slowly usually in about four weeks. Complications of various kinds may occur.

Distribution. The fever is found all over the world, but is seen specially in crowded and insanitary regions. Certain people seem to be immune to it, but the coloured races are not immune as is sometimes thought.

The typhoid germ is a rod-shaped bacillus, capable of moving by itself. The other three fevers, which differ from typhoid fever proper in certain symptoms, are each due to definite bacilli, the germs paratyphosus A, B and C. These fevers are not usually so dangerous to life as typhoid proper.

All these germs, like the cholera germ, are passed in great numbers in the fæces and urine of the patients, and they can survive outside the body in these excretions, in clothes and in articles of food, or other things such as books, letters, etc., handled and contaminated by the patients, in water, in milk or in the earth. Hence these diseases are infectious in the ordinary sense of the term.

The disease is acquired or spread by the germs getting into the mouth and being swallowed. This happens because our food or drink has been contaminated by sufferers or carriers of the disease by their hands touching it, or by our own or somebody else's hands which have come in contact with the patient or with clothes or articles which the patient has used; or by flies, ants or other insects which have touched contaminated material.

Typhoid "carriers" are people who harbour the living germs in their bodies yet receive no harm, but these germs can readily infect others. These people may not know they are carriers and even may not noticeably have had the disease themselves, but they often start epidemics by contaminating milk or water supplies.

When such an outbreak occurs the doctors and bacteriologists have to search for the contaminated water or milk or method of infection and for a possible carrier, testing all these for the presence of typhoid bacilli.

An outbreak recently occurred in Croydon and it was found that part of the water supply had become contaminated. After a search it was discovered that a workman employed was a carrier and it is possible that in some way the supply got infected from him. This man had had typhoid fever during his war service and was not known to be a "carrier."

Incubation Period. Ten to 12 days intervene before symptoms appear.

Pathology. The germs pass through the walls of the intestine after being swallowed. They are caught by the lymphoid tissue of the Peyer's patches. These swell, but fail to check the germs entering the blood where their toxins poison the whole body, affecting principally the heart, lungs, brain and muscles.

The spleen and the lymph glands in the abdomen swell during the first week. In the second week the swelling subsides if the case is a mild one. If not, the inflammation increases and sloughing commences. During the third week the swollen Peyer's patches slough and leave ulcers in the bowel wall leading to serious bleeding perhaps, or even perforation of the bowel. The ulcers usually begin to heal in the fourth week. Serious bleeding and perforation are rarer in the paratyphoid fevers.

Symptoms. During onset and first week. Tiredness, headache, furred tongue, perhaps epistaxis, loss of appetite, bronchitis, general malaise and inability to concentrate on work, abdomen slightly distended and tender in right iliac fossa, diarrhœa or constipation. Temperature steadily rising "step-ladder" fashion to 103° or 104° F. and never falling to normal, while the pulse rate is slow in comparison, 90 or 100.

Rash. This appears from seventh to tenth day usually, small red spots, rose red on white skins, dusky brown on black skins not readily seen on Indians or Chinese, scattered over chest and abdomen. They fade on pressure, last three or four days and may appear in crops.

Second Week: Drowsiness, headache may abate, dry tongue and lips, sordes on teeth, dilated pupils, abdomen more distended, spleen larger, if diarrhœa, motions are like thick soup; temperature remains up, pulse quicker; perhaps delirium. (Nurse should watch for retention of urine.)

Third Week: Mild cases may remain the same or begin to improve. In serious cases symptoms intensify; wasting occurs, dangerous complications most often occur, typhoid state, twitching, picking at bedclothes, etc.

Fourth Week: Recovery commences in ordinary cases. Relapses may occur, often in the fifth week in paratyphoids.

The typical typhoid chart shows a gradual rise of temperature the first week, the second and third week the temperature remains up, till it starts falling one or two degrees in the morning and rising a little in the evening, till it gradually reaches normal in the fourth week.

Varieties. Ambulatory types may occur, Epidemic types may be severe or mild. In children the onset is usually more sudden, the rash scanty, symptoms less severe and spleen larger.

Diagnosis is often not easy till the second week signs appear, and, in the tropics, when quinine fails to check the fever.

Laboratory Tests. Serum agglutination (Widal) tests become positive towards the end of the first week. Blood culture may show the typhoid germ in the first week. Cultures are also made from the stools or urine.

In the tropics a patient may have two diseases at the same time. Undulant fever and typhoid have been found in one patient. Malaria, dysentery and kala-azar may all be confused with typhoid fever.

Drugs are of little value in treatment. Antiserum intravenously has helped and vaccines have been given early in the incubation period. The essentials are good nursing and proper feeding.

The Paratyphoids. In these diseases usually the rise of temperature is more abrupt, duration is shorter and there is wider fluctuation earlier, toxæmia is less and complications and mortality less also. Some cases may show many of the typhoid complications but generally in milder degree. Paratyphoid A is often seen in India, Paratyphoid B in Europe and Paratyphoid C in the Balkans.

Prevention. The usual methods are carried out. Isolation. Attention to milk and water supplies, fruit, food, salads, etc. Destruction and avoidance of flies and other insects. Searching for and dealing with carriers when found. Inoculation with vaccines on the outbreak of epidemics and before travelling. All nurses going to the tropics should be inoculated against the typhoid group of fevers before sailing and be re-inoculated when epidemics occur.

Complications. Circulatory. Heart failure, rapid pulse or irregular pulse. Treat with frequent tepid sponging

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previous page next page