Topic: TYPHOID FEVER

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Introduction

Typhoid fever is a bacterial infection that can spread throughout the body, affecting many organs. Without prompt treatment, it can cause serious complications and can be fatal. It's caused by a bacterium called *Salmonella typhi*, which is related to the bacteria that cause salmonella food poisoning. **Typhoid fever is highly transmissible**. An infected person can pass the bacteria out of their body in their stools or, less commonly, in their pee urine. If someone else eats food or drinks water that's been contaminated with a small amount of infected poo or urine, they can become infected with the bacteria and develop typhoid fever.

Who is affected?

Typhoid fever is most common in parts of the world that have poor sanitation and limited access to clean water. Worldwide, children are thought to be most at risk of developing typhoid fever. This may be because their immune system (the body's natural defence against infection and illness) is still developing. But children with typhoid fever tend to have milder symptoms than adults.

Symptoms of typhoid fever

The symptoms of typhoid fever usually develop 1 or 2 weeks after a person becomes infected with the Salmonella typhi bacteria.

With treatment, the symptoms of typhoid fever should quickly improve within 3 to 5 days.

If it isn't treated, it will usually get worse over the passage of a few weeks, and there is a significant risk of life-threatening complications of typhoid fever developing. Without treatment, it can take weeks – or even months – to fully recover, and symptoms can return.

The main symptoms of typhoid fever are:

- a high temperature that can reach 39^0 to 40^0 C
- headache
- general aches and pains
- cough
- constipation

As the infection progresses, you may lose your appetite, feel sick, and have a tummy ache and diarrhoea. Some people may develop a rash. If typhoid fever isn't treated, the symptoms will continue to get worse over the following weeks and the risk of developing potentially fatal complications will increase.

How the infection spreads

The *Salmonella typhi* bacteria will be in the stools of an infected person after they have been to the toilet. If they don't wash their hands properly afterwards, they can contaminate any food they touch. Anyone else who eats this food may also become infected. Less commonly, the *Salmonella typhi* bacteria can be passed out in an infected person's urine. Again, if an infected person handles food without washing their hands properly after peeing, they can spread the infection to someone else who eats the contaminated food. In parts of the world with poor sanitation, infected human waste can contaminate the water supply. People who drink contaminated water or eat food washed in contaminated water can develop typhoid fever.

Other ways typhoid fever can be contracted include:

- using a toilet contaminated with bacteria and touching your mouth before washing your hands
- eating seafood from a water source contaminated by infected poo or pee
- eating raw vegetables that have been fertilised with human waste
- contaminated milk products
- having oral or anal sex with a person who's a carrier of Salmonella typhi bacteria

Carriers

Up to 1 in 20 people who survive typhoid fever without being treated will become carriers of the infection. This means the *Salmonella typhi* bacteria continue to live in the carrier's body and can be spread as normal in stools or urine, but the carrier doesn't have any noticeable symptoms of the condition.

Long-term carriers

After your symptoms have passed, you should have another stool test to check whether there are still Salmonella typhi bacteria in your poo. If there are, you may have become a carrier of the typhoid infection. You may need to have a further 28-day course of antibiotics to "flush out" the bacteria. Until test results show that you're free of bacteria, avoid handling or preparing food. It's also very important that you wash your hands thoroughly after going to the toilet.

How the bacteria affect the body

After eating food or drinking water contaminated with the Salmonella typhi bacteria, the bacteria moves down into the digestive system, where they will quickly multiply. This triggers a high temperature, stomach pain and constipation or diarrhoea. Left untreated, the bacteria can get into the bloodstream and spread to other areas of the body. This can cause the symptoms of

typhoid fever to get worse during the weeks after infection. If organs and tissues become damaged as a result of the infection, it can cause serious complications, such as internal bleeding or a section of the bowel splitting open. Typhoid fever is most common in the Indian subcontinent, Africa, southeast Asia and South America.

Testing for typhoid fever

A diagnosis of typhoid fever can usually be confirmed by analysing samples of blood, stools or urine. These will be examined under a microscope for the Salmonella typhi bacteria that cause the condition. The bacteria aren't always detected the first time, so you may need to have a series of tests. Testing a sample of bone marrow is a more accurate way of diagnosing typhoid fever. But getting the sample is both time-consuming and painful, so it's usually only used if other tests are inconclusive. If typhoid fever is confirmed, other members of your household may also need to be tested in case you have passed the infection on to them.

How typhoid fever is treated

Typhoid fever can usually be treated successfully with a course of antibiotic medication.

Most cases can be treated at home, but you may need to be admitted to hospital if the condition is severe.

Typhoid fever requires prompt treatment with antibiotics. If typhoid fever is diagnosed early, the infection is likely to be mild and can usually be treated at home with a 7- to 14-day course of antibiotic tablets. More serious cases of typhoid fever usually require admission to hospital so antibiotic injections can be given. With prompt antibiotic treatment, most people will start to feel better within a few days and serious complications are very rare. If typhoid fever isn't treated, it's estimated that up to 1 in 5 people with the condition will die. Some of those who survive will have complications caused by the infection.

Typhoid fever vaccination

Vaccines are available that can provide some protection against typhoid fever. These involve either having a single injection or taking 3 capsules over alternate days. Vaccination is recommended for anyone planning to travel to parts of the world where typhoid fever is widespread. It's particularly important if you're planning to live or work closely with local people. But as neither vaccine offers 100% protection, it's also important to follow some precautions when travelling. For example, you should only drink bottled or boiled water, and you should avoid foods that could potentially be contaminated.

High-risk areas

The areas with the highest rates of typhoid fever are:

- the Indian subcontinent
- Africa
- south and southeast Asia
- South America

When travelling to a foreign country, it's a good idea to make a list of relevant contact details and telephone numbers in case of an emergency.

Treatment at home

If typhoid fever is diagnosed in its early stages, a course of antibiotic tablets may be prescribed for you. Most people need to take these for 7 to 14 days. Some strains of the Salmonella typhi bacteria that cause typhoid fever have developed a resistance to one or more types of antibiotics. This is increasingly becoming a problem with typhoid infections originating in southeast Asia. Any blood, stools or urine samples taken during your diagnosis will usually be tested in a laboratory to determine which strain you're infected with, so you can be treated with an appropriate antibiotic. Your symptoms should begin to improve within 2 to 3 days of taking antibiotics. But it's very important you finish the course to ensure the bacteria are completely removed from your body. Make sure you rest, drink plenty of fluids and eat regular meals. You may find it easier to eat smaller meals more frequently, rather than 3 larger meals a day. You should also maintain good standards of personal hygiene, such as regularly washing your hands with soap and warm water, to reduce the risk of spreading the infection to others. In a small number of cases, the symptoms or infection may recur. This is known as a relapse.

Staying off work or school

Most people being treated for typhoid fever can return to work or school as soon as they start to feel better. The exceptions to this are people who work with food and vulnerable people, such as children under 5, the elderly and those in poor health. In these cases, you or your child should only return to work or nursery after tests on 3 poo samples taken at 48-hour intervals have shown that the bacteria are no longer present.

Hospital treatment

Hospital admission is usually recommended if you have severe symptoms of typhoid fever, such as persistent vomiting, severe diarrhoea or a swollen stomach. As a precaution, young children who develop typhoid fever may be admitted to hospital. In hospital, you'll have

antibiotic injections and you may also be given fluids and nutrients directly into a vein through an intravenous drip. Surgery may be needed if you develop life-threatening complications of typhoid fever, such as internal bleeding or a section of your digestive system splitting. But this is very rare in people being treated with antibiotics. Most people respond well to hospital treatment and improve within 3 to 5 days, but it may be several weeks until you're well enough to leave hospital.

Relapses

Some people who are treated for typhoid fever experience a relapse, which is when symptoms return. In these cases, the symptoms usually return around a week after antibiotic treatment has finished. The second time around, symptoms are usually milder and last for a shorter time than the original illness, but further treatment with antibiotics is usually recommended.

Complications caused by typhoid fever usually only occur in people who haven't been treated with appropriate antibiotics or who weren't treated straight away.

In such cases, about 1 in 10 people experience complications, which usually develop during the third week of infection. The 2 most common complications in untreated typhoid fever are:

- internal bleeding in the digestive system
- splitting (perforation) of a section of the digestive system or bowel, which spreads the infection to nearby tissue

Internal bleeding

Most internal bleeding that occurs in typhoid fever isn't life threatening, but it can make you feel very unwell.

Symptoms include:

- feeling tired all the time
- breathlessness
- pale skin
- an irregular heartbeat
- vomiting blood
- poo (stools) that are very dark or tar-like

A blood transfusion may be required to replace lost blood, and surgery can be used to repair the site of the bleeding.

Perforation

Perforation is potentially a very serious complication. This is because bacteria that live in your digestive system can move into your stomach and infect the lining of your abdomen (the peritoneum). This is known as peritonitis. Peritonitis is a medical emergency as the tissue of the peritoneum is usually sterile (germ-free). Unlike other parts of the body, such as the skin, the peritoneum doesn't have an inbuilt defence mechanism for fighting infection. In peritonitis, the infection can rapidly spread into the blood (sepsis) before spreading to other organs. This carries the risk of multiple organ failure. If it isn't treated properly, it may result in death. The most common symptom of peritonitis is sudden abdominal pain that gets progressively worse.

If you have peritonitis, you'll be admitted to hospital, where you'll be treated with antibiotic injections. Surgery will then be used to seal the hole in your intestinal wall.

Vaccination against typhoid fever is recommended if you're travelling to parts of the world where the condition is common.

High-risk areas

Typhoid is found throughout the world, but it's more likely to occur in areas where there's poor sanitation and hygiene. High-risk areas include:

- the Indian subcontinent
- Africa
- south and southeast Asia
- South America

Vaccination is strongly recommended if you're going to be staying or working with local people, or if you're going to be staying for prolonged periods in areas where sanitation and food hygiene are likely to be poor.

Advice for travellers

Whether you have been vaccinated against typhoid or not, it's important to take basic precautions when travelling in countries where typhoid fever is present.

For example:

- only drink bottled water from a bottle that was properly sealed, or water that's been recently boiled
- avoid ice cream and don't have ice in your drinks
- avoid uncooked fruit and vegetables, unless you have washed them in safe water or peeled them yourself
- avoid shellfish, seafood and salads.