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## **ENTERIC FEVER – A STORY OF CLIMATIC CHANGE AND FOOD**

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# Enteric Fever – A Story of Climatic Change and Food

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**Abstract – Typhoid fever is endemic fever in many countries of the world. Typhoid fever (TF) is still an important health problem in many developing countries. The incidence of the diseases is estimated about 900 cases per lakh population per year. The diseases is characterised by constant fever, headache, constipation and diarrhoea. The mode of transmission is contaminated food and water especially in rainy season. All age group and sexes are equally susceptible to the infection. Animals are also suffers of this diseases. Salmonella enteric a serotype type causes Typhoid fever. The article discusses and summarizes important effect of vectors in particular season. Here I will also through light on expost-facto of the diseases and its treatment. This review will let the readers to have a particular concern of the Salmonella safety.**

## Keywords

1. **Salmonella**
2. **Epidemiology**
3. **Drug resistance**
4. **Vaccine**

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## INTRODUCTION

Typhoid is a disease of global distribution as per data of house et al 2001. Poor sanitation, personal hygiene and contaminated food are the basic root cause of the diseases. The problem is more severe in seasons when hygienicity becomes poor. In rainy season water supply gets contaminated due to poor disposal of human excreta. This season cause the out brake of the bacteria and vectors. House fly growth is maximum in the rainy seasons which play a magic role in the transmission of the diseases. The humid environments from June to September play a significant role in the transmission of diseases. Dairy industry, sweet shops and poor hygienic area play a role in transmission (early reports Sharma et al 2005)

## Infectious Agent

The causative organism is Salmonella typhi.

## Epidemiology

Typhoid is endemic diseases. It is confirmed by early reports. It remains a serious problem in Haryana

during the rainy period. A number of reports regarding the diseases has been made (McGovern et al., 2007). Human is the only reservoir of *S. typhi* and the only source of infection is usually infected human excreta.

## Salmonella

Salmonella are aerobic, bacilli bacteria. It is gram negative and non-spore forming flagellated bacteria. The diseases causing agent is salmonella genus. The bacterium belongs to Enterobacteriaceae. Members of this genus have a multiple of pathogenicity (Table 1). Salmonella is rod shaped bacteria having a variety of strains. It affects epithelial cells. The bacterium reaches in reticuloendothelial system. Its incubation period is 14 days. Human beings are infected by taking contaminated food and water. The bacterium passes from the stomach to the intestine. Here it penetrate the mucosal epithelium. Finally the bacteria reaches in lamina propria in the gut and the multiply there (Zhang et al., 2003)

The bacteria show resistance pattern to various drug as per report of Kolkata, India. The bacterium was 100 per cent resistance to drug like Choramphenicol,

tetra cycline, ciprofloxacin upto 1990-99. But now the resistivity has been found to be decrease up to 60 per cent in all drugs.

Molecular studies are providing a new mechanism of the diseases in human. The DNA sequence has recently determined for drug resistant in Salmonella.

### Salmonella and food

The rapidly growing packed food supply has greatly facilitated the introduction of bacteria. The bacteria in food like fruit juice, vegetables, cheese, spices etc. are significant disseminator these foods outbreaks not only Typhoid but also other diseases.

Prevalence of Salmonella in selected food like aquaculture products, fruit juice, packed juices, vegetables, dairy foods, cheese, Molluscan packed food is most common.

### Symptoms

Typhoid is characterised high fever, rose coloured rash on the body, headache, abdominal pain and diarrhoea. Patient in severe cases may develop intestinal perforation, abscess and hepatic dysfunction. It causes digestive septicemia. It develops liver complications such as inflammation and abscess which sometimes may be fatal.

Typhoid fever is an acute infectious fever caused by *Salmonella typhi* and characterized clinically in typical cases by long continued pyrexia, headache, relative bradycardia, moderate enlargement of the spleen, abdominal tenderness, discomfort and rose colour eruption. However, typhoid fevers often present a typical picture which hinder its diagnosis and thus makes it more difficult to treat.

*Salmonella typhi* enters to the human body via the gastrointestinal tract through the mouth. The bacilli invade and multiply in the lymphatic tissue of the small intestine and in the neighboring lymphatic nodes. They enter to the blood stream via the lymphatic vessels. They tend to localize in the spleen and in the bone marrow. Gall bladder is always infected. During illness, the bacilli are discharged, from the body, to the stool and urine.

The incubation period varies with an average of two weeks, and the usual range is 1 to 3 weeks, although many cases have been reported well outside this range. There is some evidence that when the disease is water-borne, the incubation period is longer, probably due to the small probably number of organisms likely to be present. Shorter period of four to five days only is also not uncommon. The onset of TF is normally insidious, with malaise as a vague aches & pains, anorexia but typical presenting symptoms.

The most common observatory complications are:-

Pancreatitis, Burning micturition, Neutrophilia, Mild splenomegaly and leucopenia, Eosinophilia. Epistaxis. Pneumonitis, Severe anemia, Cardiovascular insufficiency, Myocarditis, Meningitis, Cholecystitis, Osteitis and Diffuse abdominal pain

Other pathological changes observed in body parts:-

1. Skin - Rose spots
2. Liver - Hepatomegaly
3. Spleen - Splenomegaly
4. Lungs - Bronchitis
5. Gall bladder - Cholecystitis

### Diagnosis and Treatment

The samples like blood, urine, stool, bone marrow are used to detect the bacteria. Bone marrow is infected person is positive up to 96% even when the patient received antibiotic. Earlier it was detected by widal test. Serological test are also very practical for the detection of the infection. The tests like PCR, ELISA and gene probes are also used.

The common drugs for the treatment are as under.

1. Ampicillin
2. Azithromycin
3. Chloramphenicol
4. Ciprofloxacin
5. Fleroxacin
6. Norfloxacin
7. Ofloxacin

### Carriers

A proportion of infected persons who become carriers after clinical typhoid is unaffected by modern successful treatment of acute attack. However, in developing countries, treatment of carriers cases are still problem. Carriers are very important as a source of infection. Typhoid bacilli persist indefinitely in the bile passages and in the intestines of about four percent's of patients who recover from the disease. Many typhoid patients will have negative stool test.

### CONCLUSION

Typhoid fever is a treatable disease. One day it can eradicate not only from the developing country but can be from the world. Improvement in sanitation, personal hygiene early diagnosis and treatment can easily prevent the people from suffering. Better

treatment options will also remove the transmission incidence. It is mandatory to wash hand before serving the food. All milk and milk product should be boiled and pasteurized. Clean water should be supplied by public health to the residential areas. Vaccination can also be the potential tool in the control of diseases. It beyond doubt that in coming time with the improvement in sciences the new therapy technique will be available.

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