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Typhoid fever in 3 months of infants: a case report and literature review

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ABSTRACT

Introduction:

Typhoid fever is a bacterial infection caused by *Salmonella typhi*. The transmission is fecal-oral. Typhoid fever rarely occurs under one year of age.

Case presentation:

A 3-month-old boy, weighing 6.1 kg, came to the hospital with fever complaints about six days fluctuating, not coughing. The patient is conscious, weak, cannot drink, with a temperature 39.3°C. Eye and ENT, no abnormalities. Heart, Lungs, and abdomen within normal limits. Laboratory results: Hb 10.9 g/dL, leukocytes 21,300/uL, platelets 357,000/uL, hematocrit 33%, Diff count: basophils 0%, eosinophils 0%, stems 4%, segments 41%, lymphocytes 44%, monocytes 11%. RBC 3.87 million/uL, MCV 85fL, MCH 28.0pg, MCHC 33%, ESR 1 hour 66 mm, 2hour 84 mm. Non-Reactive Covid-19 IgM & IgG Rapid Test. Peripheral blood picture: normochromic, normocytic, leukocytosis, normal platelets. Widal: *S. typhi* titer O 1/320, Tubex Test +4. The diagnosis is typhoid fever. Patients were given Cefixime 10 mg/kg body weight/day in divided doses for seven days. The patient went home in good condition.

Conclusion:

Fever ≥ 6 days in infants should consider the possibility of typhoid fever. Cefixime can be a treatment option for typhoid fever in infants. The importance of personal hygiene education for parents and caregivers.

Keywords: Typhoid fever, Infant, Cefixime.

1. INTRODUCTION

Enteric fever is still common in developing countries. It is caused by *Salmonella typhi* and *S. Paratyphi A, B, and C*. Typhoid fever is part of enteric fever, caused by *S. typhi*. Humans are the reservoir (defined as the habitat in which the agent lives typically, grows, and multiplies) of *S.typhi*[1]. *Salmonella typhi* has limited capacity to multiply outside of the human host, but it may survive for extended periods in the environment[1]. The mode of *Salmonella typhi* transmission is mostly indirect and predominantly vehicle-borne through contaminated water or food[2].

Antillon et al. Estimated the number of typhoid fever cases in low-medium income countries to be 17.8 million cases per year, with the highest incidence at 2-4 years of age[3]. Typhoid fever incidence is calculated based on the number of cases per 100,000 population per year; and classified as low incidence <10, medium 10-100, high > 100 - <500, very high ≥ 500 per 100,000

population per year[3]. In a study conducted in Asia, of the 50 children who had typhoid fever, it was found that only 30% were aged <5 years, 45% in the 5-9 years age group, and 35% in the 10-14 year group[4].

The clinical manifestations of typhoid fever and the severity of the disease vary in different populations. Factors that can influence are patient age, duration of illness, selection of antimicrobials, history of immunization, virulence, the number of bacteria ingested, and host immune status. The clinical symptoms of typhoid fever in infants are milder and nonspecific, sometimes only in fever accompanied by gastrointestinal symptoms. However, if not diagnosed quickly, it can be severe complications. Typhoid fever may be difficult to distinguish clinically from other febrile illnesses, so that in addition to clinical acumen, it is necessary to select the appropriate investigations.

2. CASE PRESENTATION

A 3-month-old boy, weighing 6.1 kg, came to the hospital with fever complaints about six days fluctuating, not coughing. The patient is conscious, weak, not drink, with a temperature 39.5°C. Eye and ENT, no abnormalities. Heart, Lungs, and abdomen within normal limits. No phymosis. Laboratory results: Hb 10.9 g/dL, leukocytes 21,300/uL, platelets 357,000/uL, hematocrit 33%, Diff count: basophils 0%, eosinophils 0%, stems 4%, segments 41%, lymphocytes 44%, monocytes 11%. RBC 3.87 million/uL, MCV 85fL, MCH 28.0pg, MCHC 33%, ESR 1 hour 66 mm, 2hour 84 mm. Non-Reactive Covid-19 IgM & IgG Rapid Test. Peripheral blood picture: normochromic, normocytic, leukocytosis, normal platelets. Widal: *S. typhi* titer O 1/320, Tubex Test +4. The diagnosis is typhoid fever. Patients were given Cefixime 10 mg/kg body weight/day in two divided doses for seven days. The patient went home in good condition. Seven days after cefixime was discontinued, Widal's examination of the patient and his mother showed *S.typhi* titer O 1/320, *S.typhi* titer O 1/160, respectively.

3. DISCUSSION

Typhoid fever baby incidence is scarce because maybe the baby still has antibodies obtained from his mother during pregnancy. On the other hand, the clinical is very mild, sometimes asymptomatic, and typhoid fever unthinkable. Furthermore, babies under six months of age are still exclusively breastfed, so they rarely use contaminated drinking by *S. typhi*[1]. In this case, the patient does not breastfeed, only drinks formula milk, so the risk of contracting *S.typhi* from water or milk bottles is very high. The patient's mother has an antibody titer O of *S.typhi* 1/160, very likely to be a carrier even though the patient's mother always tries to use mineral water that has been heated and wash her drinking utensils with boiling water. In this case, it could be the transmission from direct contact of the patient's mother's hand to the baby's mouth. That is why untreated typhoid fever survivors may shed the bacterium in the feces for up to 3 months. Therefore, after disease resolution, three stool cultures should be performed in one-month intervals to rule out a carrier state. Concurrent urinary cultures should be considered[2,5].

Initially, the patient was thought to have only had an upper respiratory infection and was not drinking enough. The patient was only given milk and acetaminophen medication for up to 6 days. Because the patient is getting weaker, his body temperature is getting hotter, and he does not want to drink anymore, the patient is hospitalized. The possibility of fever caused by ENT and eye infections was not found. The patient also did not suffer from a UTI or phymosis. Laboratory tests showed eosinophilia[6], Widal +: *S.typhi* titer O 1/320, confirmed by IgM anti-*Salmonella typhi* (Tubex

test) +4. ESR of 2 hours 84 mm indicates an acute inflammatory process. The Diagnosis is Typhoid fever. Examination of blood/feces/urine culture is the gold standard for typhoid diagnosis, but it requires experts, time, and money. Currently, various serological tests for typhoid fever continue to develop as an alternative diagnosis. The examination can be done by ELISA, rapid test, hemagglutination, or PCR using blood, urine, or saliva specimens. Each test has a different sensitivity/specificity in diagnosing typhoid fever[7-11]. In this case, the fever has been six days, and culture checks cannot be done because the patient cannot be afforded financially and has limited laboratory facilities. Based on the data above, the patient was diagnosed with typhoid fever[8,9].

The patient was given Cefixime 10 mg/kg body weight/day in 2 divided doses; the patient's clinical condition got better, and finally went home in good condition. Cefixime is given because it is still the primary choice, easy to obtain, small in quantity, inexpensive, can be given orally, and compliance is high because it is given in 2 divided doses. Study Rahman et al. demonstrated cefixime sensitivity to 80%[12], and other studies also showed cefixime to be effective[13,14]. Five percent to 10% of patients treated with antibiotics experience a relapse of typhoid fever after initial recovery. Relapses typically occur approximately one week after therapy is discontinued[5]. In this case, seven days after the antibiotic was stopped, the patient was in good clinical condition and drank milk as before. Considering that the patient may be a carrier, hand hygiene must be maintained and always reminded to wash hands before touching eating and drinking utensils, also always use clean, heated water.

4. CONCLUSION

Fever ≥ 6 days in infants should consider the possibility of typhoid fever. Cefixime can be a treatment option for typhoid fever in infants. The importance of personal hygiene education for parents and caregivers. Overall, long-term prevention strategies for typhoid fever should be based on improved drinking water sources, adequate sanitation, and hygiene, food safety.

AUTHORS' CONTRIBUTIONS

Harapan Parlindungan Ringoringo as the main author.

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