

## An unusual complication of enteric fever: Myocarditis

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### Introduction

Enteric fever (typhoid fever) occurs worldwide, primarily in developing nations whose sanitary conditions are poor. Enteric fever is endemic in Asia, Africa, Latin America, the Caribbean, and Oceania but 80% of cases come from Bangladesh, China, India, Indonesia, Laos, Nepal, Pakistan or Vietnam.<sup>(1)</sup>

Typhoid fever used to be a fatal disease with 10% to 20% mortality in the pre-antibiotic era. With antibiotic treatment, fatality dropped to about 1% in the endemic countries.

### Case Report

A 19 years old Male, presented to the Emergency in intubated state with history of fever of two weeks duration. Patient was admitted in various hospitals for short duration before coming to our hospital. Fever was high grade and associated with chills and rigors. He also has history of loose stools, abdominal discomfort, watery diarrhea and anorexia. He has received various antibiotics intermittently during his short stay in previous hospitals. In previous hospital he developed confusion, shortness of breath and hypotension? ARDS hence intubated and put on mechanical ventilation. His CT brain was normal.

On arrival in our hospital, on clinical examination, patient was in intubated state, his temperature was high and heart sound was muffled. His blood test were notable for mild anemia with leukocytosis with neutrophilic predominance and elevated Transaminases (ALT/AST-85/325), prolonged International Normalized ratio with thrombocytopenia and hypokalemia. His X-Ray chest revealed homogenous opacities in both lung fields. A possibility of ARDS/Acute Pulmonary Edema was considered.

Later, patient's relatives informed the blood culture of the patient (Previously where patient was admitted) his blood culture has grown Salmonella Typhi which was sensitive to most of the antibiotics.

His ECG showed sinus tachycardia with ST-T changes and 2-D Echocardiography revealed global LV dyskinesia with EF-30% which may be due to myocarditis of enteric fever. Cardiac MRI was done which showed LV dysfunction.

His blood culture, in our hospital, did not grow Salmonella Typhi as patient already received various antimicrobial agents in his previous hospitals.

As the patient was sick with multi-organ involvement, his antibiotic treatment was shifted to meropenem with other supportive treatments. His condition started improving and he was weaned-off from the ventilator on the 3<sup>rd</sup> day of admission and shifted to the ward and later discharged in stable condition.

### Discussion

Myocarditis refers to inflammation and damage of the heart muscles. It is believed that 5% to 20% of all cases of sudden death in young adults are due to myocarditis. Myocardium has poor regenerative ability. Scarring of muscle tissues and heart failure is the common sequel.

Myocarditis with Salmonella infection occurs in 1-5% of cases and Endocarditis is very rare.<sup>(2)</sup>

A study done by N. N and, M. Sharma et al, conclude in their study that definite injury to the heart occurs during typhoid fever. However it is difficult to ascertain that exact time and extent of injury.<sup>(3)</sup>

Another study done by Prabha et al, in a series of 100 bacteriological or serologically proved enteric fever, clinical evidence of Myocarditis was noted in 7-cases and ECG evidence of myocarditis was noted in 46% of patient. The most common ECG abnormality was QTc prolongation (29%) followed by ST-T changes (20%), Bundle Branch block (BBB-7%) and arrhythmias (2%). This study indicates that Myocarditis in the course of enteric fever is more common than is generally believed.

In enteric fever with involvement of Myocardium, Myocarditis usually presents with severe hypotension, tachycardia, shock and features of Congestive cardiac failure or acute pulmonary edema. ECG changes vary from ST-T changes to Bundle Branch Block depending upon the severity. ECG changes revert to normal in one to two months in most of the patient after getting proper treatment but Bundle branch block may persist for years.<sup>(4)</sup>

Enteric fever, if untreated, carried a high mortality rate that was significantly reduced in the Antibiotic era to less than 1%. The most common complication in enteric fever is gastrointestinal manifestation in the third week of infection (life threatening).<sup>(5)</sup>

Other extra intestinal manifestations can also occur, including CNS involvement (3-35%), Pulmonary (1%-86%), bone and joints (<1%), Hepatobiliary system (1-

26%), and genitourinary system(<1%). Cardiovascular complications occurred in 1% to 5%, and include Myocarditis and Endocarditis as the main complications, and pericarditis and arteritis which are less common.<sup>(6)</sup>

Recently case reports showed enteric myocarditis as complication in traveler returning from endemic country presented as a sudden onset chest pain and ECG changes showed infero-lateral ischemic changes with elevated Trop-I and inflammatory markers. 2-D Echocardiography and Coronary angiogram did not reveal any abnormality and patient recovered with intravenous 3<sup>rd</sup> generations of Cephalosporin antimicrobials.<sup>(7)</sup>

Another case report, where traveler returning from Nepal (an endemic country of enteric fever), developed near fatal Myocarditis and cardiac arrest due to VF (Ventricle fibrillation) and luckily survived.<sup>(8)</sup>

After reviewing various literature it is also evident that most of the patient developing complication of myocarditis are of young age. Infact, our patient was only 19 years old who developed serious complication of enteric fever and survived.

## Conclusion

Myocarditis as a complication due to Enteric fever is not as rarity and could be a fatal if not treated properly and timely. ECG changes and Echocardiography changes, in most of the cases, are reversible. These changes must be observed very carefully for complications from myocarditis in case if patient presented with fever and chest pain with ECG changes. Need to keep in mind if the patient is from endemic area, because traveler from developed countries, Enteric fever is not less obvious.

## References

1. Chau TT, Campell J I, Galindo CM, Van Minh Hoang N, Diep T S, Nga T T, et al. Antimicrobial drug resistance of salmonella enteric serover Typhi in Asia and molecular mechanism to reduced susceptibility to the Fluoroquinolones. Antimicrob agent chemother. 2007 Dec.51(12:4315-23(Medline).
2. Khan G Q, Kadri MS, Hasan G, et al .Salmonella Typhi Endocarditis: A case report. J Clin Pathol 2003;56:801-802.
3. Cardiac status in Typhoid Fever. Angiology. November 1996 vol. 47 no. 11, 1095-1100).
4. Prabha A, Mohanan, Pereira P, Raghuvveer CV. Myocarditis in enteric Fever. Indian J Med Sci 1995;49:28-31.
5. Pary CM, Hien TT, Dougan G, White N J, Farrar J J. Typhoid fever. N. Engl J Med 2002;347:1770-1782.
6. Huang DB, Du Pont HL. Problem Pathogens: extra-intestinal complications of salmonella enteric serotype Typhi infection. Lancet Infectious Dis 2005;5:341.
7. Typhoid fever, Complicated by myocarditis, in a traveler returning to UK.Shreena Shah. Simon William Dubrey.BMJ case report 2013; doi: 10.1136/bcr-2012-008387.
8. Michal Palomo, MD, Reuma Margalit-yehuda, MD et al. Near fatal myocarditis complicating typhoid fever in a

traveler returning from Nepal. International Society of Travel medicine, 1195-1982. Journal of travel Medicine 2013; Vol 20(issue 5):329-332.