

# Clinico-pathological Study of Enteric Fever at Rapti Academy of Health Sciences, Ghorahi, Dang, Nepal

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## ABSTRACT

**INTRODUCTION:** The most typical cause of fever in developing nations is enteric fever. Because the complications are extremely severe, an early diagnosis is essential. Early diagnosis can improve the patient's chance of being cured. Thus, the objective of our study was to compare between blood culture, IgG and IgM method. **MATERIALS AND METHODS:** This study was conducted among 240 clinically suspected cases of enteric fever from 17<sup>th</sup> February 2019 to 17<sup>th</sup> May 2019 at Rapti academic of health science, Dang. We have done first Blood culture was performed and IgG and IgM method were used to detect enteric fever for same sample. **RESULTS:** Out of 240 patients, 112 of the 240 cases were men and 128 were women. Blood culture testing revealed 72 positive samples, or 30%, and IgG and IgM testing revealed 64 positive cases, or 26.66%, for the same cases. Therefore, our investigation demonstrated that the blood culture method is equally as successful as the IgG and IgM method. **CONCLUSIONS:** The study concludes that the blood culture IgG and IgM methods are equally effective. There are not always blood culture settings accessible in developing countries like Nepal. Therefore, IgG and IgM methods are preferable.

**Keywords:** Blood culture, enteric fever, perforation.

## INTRODUCTION

Typhoid fever, or enteric fever was one of the leading causes of death in the western world 200 years ago [1]. Mortality and morbidity fell in developed nations like Nepal, India, and Latin America as a result of better health and sanitary conditions in the western world [2–6]. Children also were afflicted by typhoid fever, but their mortality and morbidity rates were not very high. In rural Nepal, records are not kept accurately, and many patients are treated. Typhoid should be diagnosed early in order to start treatment before complications arise. Typhoid's most frequent side effects are perforation, peritonitis, and sepsis [6].

### Epidemiology

In recent years, Asia, Africa, and Latin America have seen the highest rates of typhoid fever. More than 20 million cases are reported annually, with Bangladesh, India, Pakistan, Nepal, and India accounting for 85% of cases worldwide [7]. Due to the rainy season, South Asia's most prevalent sickness occurred from July to October [8].

### Clinical presentation

Typhoid fever most frequently manifests as fever, headache, diarrhea, constipation, lethargy, weakness, and vomiting at Rapti Academic of Health Sciences. Stomach perforation, gastrointestinal hemorrhage, hepatitis, and cholecystitis are the complications of typhoid fever. Myocarditis, shock, encephalopathy, delirium, cranial or peripheral neuritis, Guillain-Barré syndrome, meningitis, anemia, diffuse intravascular coagulation, thrombocytopenia, focal abscess, pharyngitis, miscarriage, relapse, chronic carrier, influenza, and dengue [9] are just a few of the conditions that can occur.

## MATERIALS AND METHODS

Clinically suspected case of typhoid fever was referred to us by the doctor. The age range was from 5 to 73 where the female was 128 and the man was 112. We send the same sample for culturing. Therefore, we used a rapid detection kit for IgG and IgM against *S. typhi* in serum when

the number of culture positive cases reached 72. IgG and IgM antibodies to *S. typhi* can be concurrently detected and distinguished throughout the complete body using a quick and easy laboratory test for typhoid. Anti-human IgM (test line 1), anti-human IgG (test line 2), and goat anti-mouse antibodies were immobilized on the nitrocellulose membrane of the kit (control line). Additionally, mouse IgG and *S. typhi*-specific antigens were attached to the colloid gold particles, respectively. These conjugates were put on a conjugate pad made of polyester or glass. The result was apparent as a red line within -20 minutes in the test line 1(IgM) and/or in the test line 2(IgG) on the membrane when they migrated with the sample by passive diffusion and both the conjugate and sample come into contact with antibodies against *S. typhi* [10]. As the solution keeps moving, it comes into contact with a control reagent that binds a control conjugate and creates another red control line. The data was entered into Microsoft Office Excel and analyzed with SPSS version 17.

## RESULTS

There were 240 cases of typhoid which have been clinically suspected. We provided cultured cases. 72% of the cases were positive, which was 30%. There were 20 IgG positive patients and 44 IgM positive cases where IgM denotes an acute disease, but IgG denotes a chronic ailment. Total positive cases are 64 that is 26.66%. So IgG and IgM methods are as effective as culture.

## DISCUSSION

Enteric fever is mainly a clinical diagnosis based on history and examination. A gradual onset of fever, particularly with one or more abdominal symptoms, should raise suspicion of enteric fever in endemic areas [11]. Blood culture is the optimum method to confirm the diagnosis by isolating the organism and testing antimicrobial sensitivity. It takes two to three days for a result, and empirical antimicrobial treatment is required in the interim. It has a sensitivity of 61% [12].

## ADDITIONAL INFORMATION AND DECLARATIONS

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A negative blood culture does not exclude enteric fever. Serological tests, including the Widal test and newer rapid diagnostic tests, are not confirmatory in the acute phase of illness. The Widal test measures antibodies against O and H antigens of *S. Typhi* and *S. Paratyphi A*. It is cheap and simple but lacks sensitivity and specificity [13]. A single measurement in the acute phase of the illness may be false negative or false positive [14]. Other commercially available, point-of-care rapid diagnostic tests detect IgM antibodies against *S. Typhi* antigens [15]. By using culture methods in which we got 72 positive cases which is 30%. In other study done by Paul and Bandyopadhyay the positive cases by blood culture were 80%. That was more than our study and in same study using IgG and IgM methods 93% sensitive which almost same as our study. The blood culture is commonly positive in first week. In developing country like Nepal, the blood culture is not found in everywhere. So, IgG and IgM is effective method for diagnosis of typhoid [10]. Although gold standard is blood culture but our study showed that IgG and IgM method is as effective as blood culture. The complication of typhoid fever is fatal to patients. So, early diagnosis is necessary.

## CONCLUSIONS

Enteric fever is common in developing countries like Nepal, India, Bangladesh. Clinically suspected case first we have done the blood culture and IgG and IgM Method for diagnosis of patients. Although the gold standard for typhoid fever is blood culture but in our study showed the IgG and IgM method is as effective as blood culture. In developing countries like Nepal blood culture settings are not available in every where.

So we recommended IgG and IgM method for diagnosis of enteric fever. Early diagnosis is necessary to prevent from complications. In our study other think show that the cases of enteric fever increased during rainy season. We have to work on sanitation and hygiene during rainy season.

**Author Contributions:** Study KKJ and DR designed the framework of the paper, performed the laboratory analysis, and wrote the draft paper. Both the authors had a full discussion and commented on the paper.

**Data Availability:** Data will be available upon request to corresponding authors after valid reason.

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