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Letter to Editor

Paediatrics Section

Correspondence: *Shigella sonnei* Sepsis in an Infant: A Case Report

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Keywords: Blood culture, Immunocompromised, Stool culture

Dear Editor,

We read with much interest the article by Nayyar C et al., published in the recent issue of your journal [1]. First of all, we would like to commend the authors for such an informative report but at the same time would like to make the following comments, which would benefit the general readers of Journal of Clinical and Diagnostic Research (JCDR).

The authors describe a six month old infant with acute watery diarrhoea, vomiting, fever, severe dehydration and septic shock. He was subsequently diagnosed as *Shigella sonnei* sepsis with the help of blood and stool culture, and was managed successfully with intravenous antibiotic and other supportive measures. Citing this case, the authors conclude by stating that "Blood cultures as well as stool cultures should be performed in patients presenting with Acute febrile Gastroenteritis (AGE), whether immunocompromised or not". We disagree with the authors in this aspect. Firstly, viral agents (such as rotavirus, norovirus, etc.) account for almost 70% of cases of AGE in children; while bacteria are responsible for 10-20% cases only [2]. Secondly, fever is a common feature in viral diarrhoea. Fever was present in almost 61% of children with rotaviral diarrhoea requiring hospital admission; even in the outpatient setting of India, the triad of vomiting, diarrhoea, and fever was seen more commonly in rotavirus positive children compared to rotavirus negative ones [3, 4]. Though, bacterial infection is sometimes hard to distinguish from viral infection, persistent high fever (>104ºF) and diarrhoea that is bloody or contains mucus are more common with bacterial diarrhoea [5]. Thirdly, the potential number of bacteria associated with gastroenteritis is now estimated to be more than 40 individual species. In contrast, both routine traditional and more contemporary molecular methods may screen for only four or five organisms [6]. Therefore, a stool test will not be able to provide a microbiological diagnosis in a large number of bacterial diarrhoeas, though they are able to pick up the commoner ones.

Centers for Disease Control and Prevention (CDC) recommend that "Stool cultures are indicated in cases of dysentery but are not usually indicated in acute, watery diarrhoea for the immunocompetent patient". However, they also emphasise that "Certain laboratory studies" such as "Complete blood counts and urine and blood cultures" might be important when the underlying diagnosis is unclear or diagnoses other than AGE are possible [7]. Similarly, American Family Physician (AFP) recommends that "A stool specimen should be examined for white blood cells in any child who appears toxic with high fever and diarrhoea". And "The finding of white blood cells should prompt further investigation to rule out invasive bacterial disease. The presence of gross blood in the diarrhoeal stool also suggests a more serious infection, so children with bloody diarrhoea should undergo a rectal swab or stool culture. Other laboratory tests are optional and are dictated by the severity of illness" [8].

To summarise, both the authors and the readers need to understand that investigations such as stool and blood culture was completely justified and turned out to be helpful in the present case as the infant had diarrhoea with severe dehydration and septic shock. But, performing such investigations cannot be recommended to all children who present with mere "AGE".

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AUTHOR'S REPLY

We thank the reader for their interest in our case report and for their valuable comments. We would like to add following comments on the pertinent issue they have raised.

Case report is not a tool for recommending practice guidelines in any setting and our conclusion was in the background of the reported case with severe diarrhoea and septic shock. As the reader themselves cite, the AFP recommendation, "A stool specimen should be examined for white blood cells in any child who appears toxic with high fever and diarrhoea" [1]. The clinical setting warranted stool and blood culture in our case.

We agree that Rotavirus is the leading cause of moderate to severe diarrhoea, and accounts for approximately 40% of all diarrhoea cases requiring treatment in India [2]. There is substantial heterogeneity in pathogen-specific burdens of diarrhoea, with age, geography, season, rotavirus vaccine usage, and symptoms being important variables.

Unavailability of safe drinking water, hygienic food, and problems of open defecation in developing countries like India make enteric pathogens an important aetiology in childhood diarrhoea. In a study from India, E. coli was identified as an important cause of paediatric diarrhoea [3]. Gram negative pathogens in background of high prevalence of malnutrition contribute greatly to mortality.

A multicentric study to know the pathogen specific diarrhoeal burden in community identified Norovirus GII, rotavirus, *Campylobacter* species, astrovirus and *Cryptosporidium* species to have the highest attributable burdens of diarrhoea in the first

year of life and *Campylobacter* species, norovirus GII, rotavirus, astrovirus, and *Shigella* species as important pathogen in second year of life. They also reported bloody diarrhoea to be primarily associated with *Campylobacter* species and *Shigella* species, fever and vomiting with rotavirus, and vomiting to be associated with norovirus GII [4].

We agree that there are large number of bacteria that can cause diarrhoea but we can identify the relevant ones with stool culture i.e., *Escherichia coli*, *Shigella* species, *Vibrio cholerae, Salmonella* species and *Yersinia enterocolitica* except for *Campylobacter* species.

It is important to remember that viruses are indeed the most common cause of diarrhoea in children and to avoid unnecessary use of antibiotics to prevent the scourge of multidrug resistant pathogens which are emerging fast, all over the world. The relevant investigations need to be decided in the setting of the reported heterogeneity of possible aetiologies and clinical setting.

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