*Case Report*

# Shigellemia in a post renal transplant patient: a case report and literature review

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**Abstract**

Shigellemia is a complication of shigellosis that occurs generally in malnourished children. In adults, shigellemia is usually seen in immunocompromised individuals. Here we report the first case of shigellemia in a renal transplant patient from India. The patient had history of diarrhea, which was treated symptomatically. Subsequently, the patient developed high-grade fever and blood culture was positive for *Shigellaflexneri.* Recovery was uneventful after the initiation of antimicrobial therapy. In a country like India with high prevalence of shigellosis, screening for *Shigella* in the pre-transplant period may minimize the morbidity and prolonged hospital stay associated with the complication of septicemia.

**Key words:** post transplantation; renal; shigellemia

*J Infect Dev Ctries* 2014; 8(2):237-239. doi:10.3855/jidc.3000

(Received 10 September 2012– Accepted 04 June 2013)



## Introduction

Shigellemia is generally seen in patients with malnutrition, diabetes mellitus, immunosuppressed states, like post solid organ transplantation, and rarely in immunocompetent individuals [1]. In the state of immunosuppression following renal transplantation, there is an increased chance of pyogenic infections caused by skin and bowel flora. Septicemias following these infections contribute significantly to morbidity and mortality [2]. In endemic countries other unusual pathogens may also contribute to episodes of septicemia. Here we report a rare case of shigellemia in a post renal transplant patient. In world literature, around one hundred cases of shigellemia have been described, only three of which were reported in post renal transplant patients [3, 4]. To our knowledge, this is the first report of shigellemia in a renal transplant recipient from India.

## Case Report

A 44 year-old male underwent renal transplantation in June 2010 for a chronic kidney disease. He started a triple drug immunosuppression with tacrolimus, mycophenolate mofetil and steroid. During the early post-transplant period, he developed graft dysfunction with biopsy proven acute cellular rejection for which he received three pulses of methylprednisolone with good response. Three months after the transplant, he presented with pain abdomen and diarrhea with 6-8 stools a day. There was no history of vomiting or passage of blood or mucus in the stools. The patient was investigated for atypical protozoans which were negative. The stool sample showed >50 pus cells/high power field. Diarrhea lasted for 7-8 days, which was treated symptomatically with intravenous fluids. Subsequently, the patient developed high-grade fever and signs of systemic inflammatory response syndrome. Microbiological evaluation of blood and urine was done. Blood culture was positive for *Shigella flexneri* and was sensitive to first-line drugs tests. The patient was treated with intravenous cefotaxime 1g, twice a day, for a week. Recovery was uneventful and the patient was discharged with his routine immunosuppressive regime. Subsequent stool culture done to rule out any carriage showed no growth of *Shigella* spp.

**Table 1:** Cases of shigellemia reported in India

| S no | Year | No of cases | Age group | Risk factors | Outcome | Blood culture *Shigella* spp.,(no) | References |
|---|---|---|---|---|---|---|---|
| 1 | 1966 | 5 | 4mo-6yr | Anemia | One recovered | *S. dysentriae(3)*<br>*S. flexneri(1)*<br>*S. sonnei(1)* | [10] |
| 2 | 1968 | 1 | NA | NA | NA | *S. flexneri(1)* | [11] |
| 3 | 1974 | 7 | 4mo-17 | Marasmus, chronic disease, renal failure | One recovered | *S. dysentriae(6)*<br>*S. flexneri(1)* | [12] |
| 4 | 1980 | 3 | 7mo/3yr/7mo | NA | Died | *S. dysentriae(1)*<br>*S. flexneri(2)* | [13] |
| 5 | 1984 | 2 | 12mo/18mo | Marasmus | Deteriorated/ died | *S. dysentriae(1)*<br>*S. Flexner i(1)* | [14] |
| 6 | 1988 | 1 | 11mo | Post Measles | Recovered | *S. flexneri(1)* | [15] |
| 7 | 2002 | 4 | 2mo-3yr | NA | Died | *S. dysentriae(3)*<br>*S. flexneri(1)* | [16] |

NA-Not available

## Discussion

Renal transplant recipients remain at a high risk of hospitalization for septicemia, which contributes significantly to morbidity and mortality.

A retrospective study of 33,479 renal transplants conducted in the US showed an adjusted incidence ratio of 41.52% of hospitalization due to septicemia [5]. With only a handful of reported cases of septicemia due to *Shigella* spp. in a post-transplant patient, it is believed to be a rare entity [3, 4]. Between 1918 and 2012 more than 150 cases of shigellemia, predominantly affecting the pediatric age group, have been reported. The majority of patients were under 5 years, having one of the risk factors like severe nutritional deficiency, pneumonia and sickle cell anemia [1]. This coincides with the age distribution of shigellosis [6]. Shigellemia in adults is seen in high risk groups like diabetes mellitus, autoimmune hemolytic anemia, sickle cell anemia, and post solid organ transplantation [7].

In India around 23 cases of shigellaemia were reported between 1945 and 2012 and these are summarized in Table 1. The majority of patients were children and adolescents with underlying risk factors like anemia, nutritional deficiency and measles. The most common *Shigella* spp was *S. dysenteriae* (n = 14) followed by *S. flexneri* (n = 8) and *S. sonnei* (n = 1). A mortality rate of 86 % (20/23) was repoted in these patients.

Three cases of shigellemia following renal transplantation have been described in literature; however, no case from India has been reported so far [3,4]. In India, approximately 3,500 transplantations are performed in 170 recognized institutions for kidney transplantation every year [8]. Thus, in a country like India, which is endemic for shigellosis, with a high rate of renal transplantation, the reports of shigellemia seem to be an underestimation. The under-reporting may be due to: 1) failure to obtain blood specimen at the proper time of illness; 2) inhibition of blood borne *Shigella* spp., by humoral antibodies; 3) prior administration of antibiotics; 4) lack of suspicion [9].

In our case, when the patient presented with watery diarrhea, parasitic causes were investigated and culture was not sent in spite of high number of pus cells in the stool sample, which is highly suggestive of shigellosis. Timely stool culture sensitivity would have averted the septicemic complication. Here we would like to emphasize that in endemic countries like ours, where the renal transplantation rate is high, the pre-transplant period should also include a stool culture for pathogens like *Shigella spp.* Any carriage identified may be treated with an oral suppressive antibiotic therapy that will reduce the risk of complications. Thus subsequent morbidity and hospital stay of this high-risk group may be minimized.

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**Conflict of interests:** No conflict of interests is declared.