

# Typhoid glomerulonephritis and intestinal perforation in a Nigerian child

OI Odetunde, OU Ezenwosu<sup>1</sup>, OA Odetunde<sup>2</sup>, JC Azubuike<sup>3</sup>

Pediatric Nephrology Unit, <sup>1</sup>Department of Pediatrics, University of Nigeria Teaching Hospital, Ituku Ozalla, Departments of <sup>2</sup>Surgery, Pediatric Surgery Unit, and <sup>3</sup>Pediatrics, Enugu State University Teaching Hospital, Enugu State, Nigeria

## Abstract

The number of children with renal complications following salmonella infection cannot be precisely defined in the sub-Saharan Africa due to scarcity of reliable data. We report a 3-year-old boy with glomerulonephritis secondary to typhoid infection and later intestinal perforation. He presented with fever, generalized body swelling, oliguria, coke-colored urine and hypertension and had been managed 3 weeks earlier for typhoid fever in a private hospital. Laboratory investigations showed proteinuria, hematuria with red cell casturia and azotemia. Abdominal X-ray done was suggestive of typhoid intestinal perforation that was confirmed at exploratory laparotomy. He was managed aggressively with antibiotics and was discharged on the 25<sup>th</sup> day of admission. To the best of our knowledge, this is the first documented case report of acute glomerulonephritis and intestinal perforation as co-complications of salmonella infection in Nigeria.

**Key words:** Acute glomerulonephritis, intestinal perforation, Nigeria, typhoid fever

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## Introduction

Unlike in the developed countries, typhoid enteritis remains common in the developing areas of the world like Africa.<sup>[1]</sup> One of the unusual manifestations of typhoid fever is the renal complication,<sup>[1]</sup> which is known as nephrotyphoid or typhoid nephropathy and accounts for about 1% of its extra-intestinal complications.<sup>[1,2]</sup> Although 25% of patients excrete *Salmonella typhi* in the urine during the acute illness, renal complication may result from diverse pathophysiological mechanisms.<sup>[3,4]</sup> Renal and other extra-intestinal complications of typhoid infection have also been attributed to an increase in multidrug-resistant *Salmonella typhi*.<sup>[1,4]</sup> Typhoid intestinal perforation in children is associated with high mortality and its outcome can be improved by early presentation and intervention.<sup>[5]</sup>

We report the first documented case of acute

glomerulonephritis co-existing with perforation in a Nigerian child with typhoid septicemia. The challenges of management in a resource-limited setting are highlighted.

## Case Report

O.N is a 3-year 9-month-old male patient who presented with generalized body swelling of 5 days, reduced urine output and passage of coke-colored urine of 3 days and diarrhea of 1 day duration. There was a preceding history of fever for 3 weeks which was managed in a private hospital as a case of typhoid septicemia with oral antibiotics before being referred to our center. The O and H agglutinins titer for *Salmonella typhi* and Paratyphi A were significant (greater than 1/180 and 1/120 respectively), but blood culture was not done. He also received a blood transfusion at the referral hospital.

### Address for correspondence:

Dr. OI Odetunde,  
Pediatric Nephrology Unit, Department of Pediatrics,  
University of Nigeria Teaching Hospital, Ituku Ozalla,  
Enugu, Enugu State, Nigeria.  
E-mail: odetoyintola@yahoo.co.uk

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Physical examination revealed an acutely ill-looking child with a temperature of 39°C, mild pallor, tachypnea, tachycardia, hypertension (blood pressure of 110-120/70-80 mmHg) and generalized edema. Positive findings on systemic examination were abdominal distension with ascites demonstrable by fluid thrill. A provisional diagnosis of acute glomerulonephritis was made, probably post-infective to rule out typhoid septicemia with complication. Urine examination showed proteinuria, hematuria with red blood cell casturia. Blood test showed azotemia with normal serum electrolytes and liver function tests.

Abdominal ultrasound showed ascitic fluid with hepatosplenomegaly and slightly enlarged kidneys with normal echotexture and corticomedullary differentiation. Blood culture, urine culture, Widal test, ASO titer, C<sub>3</sub> complement and serum protein (total and albumin) could not be done because of the caregiver's financial constraint.

He was managed with antihypertensive (alpha-methyl dopa), intravenous frusemide, intravenous ciprofloxacin, strict input and output of fluid, dietary modification with salt restriction, daily weighing and urinalysis. His clinical condition deteriorated on the 5<sup>th</sup> day of admission with increased abdominal distension, persistent fever, generalized abdominal tenderness and guarding [Figure 1]. A repeat abdominal ultrasound and an erect and supine abdominal X-ray revealed intestinal perforation with dilated bowel loops, air under the diaphragm and multiple air-fluid levels. He had emergency exploratory laparotomy with findings of pus, bread and butter exudates in the abdominal cavity with profuse ascitic fluid. There was also intestinal perforation of 0.5 cm × 0.5 cm diameter on the ileum, 5 cm from the ileocecal junction [Figure 2]. The antibiotic was changed to intravenous meropenem and clindamycin for 72 h and intravenous ceftriaxone and metronidazole for 7 days and later to oral amoxicillin. There was dramatic clinical improvement with the resolution of all the symptoms. He



**Figure 1:** Generalized edema and ascites with abdominal distension masking the early sign of intestinal perforation

was discharged home for follow-up in the clinic after 25 days of hospitalization.

## Discussion

Typhoid glomerulonephritis is a rare complication affecting 2-4% of typhoid patients in endemic areas and in subjects travelling from endemic regions.<sup>[1,3]</sup> In addition to the clinical symptoms of typhoid fever, patients with renal complications present with edema, macro-or micro-hematuria, azotemia and proteinuria with or without hypertension.<sup>[2,6]</sup> This is similar to the presentation in our patient. As in our patient, most studies report development of complications of typhoid infection in the 3<sup>rd</sup> week of infection in untreated and multi-antimicrobial resistant cases of typhoid infection in children.<sup>[1,4,5]</sup> Reports from other centers have documented glomerular involvements to have a benign course with complete recovery occurring within few weeks.<sup>[6,7]</sup> The index patient presented with similar glomerular involvements with full resolution of symptoms by the end of 3<sup>rd</sup> week of hospital admission.

Intestinal complications such as intestinal perforation and gastrointestinal hemorrhage are noted to be more common than extra intestinal complication like nephritis in patients with typhoid infection.<sup>[1]</sup> Our patient presented with symptoms of acute glomerulonephritis with generalized edema and ascites with abdominal distension which delayed the suspicion of possibly long existing intestinal perforation until the 5<sup>th</sup> day of admission.

Though Widal agglutination test may be used for the confirmation of this disease, it has several limitations, leaving blood culture as the gold standard in the diagnosis.<sup>[8]</sup> The Widal test done in the peripheral hospital



**Figure 2:** The laparotomy findings of the patient showing an intestinal perforation of 0.5 cm × 0.5 cm diameter on the ileum, 5 cm from the ileocecal junction with bread and butter exudates in the abdominal cavity

showed a significant titer but blood culture and other investigations could not be done due to financial constraints of the care giver, which further delayed the diagnosis and surgical intervention. The exploratory laparotomy findings in our patient, the pattern of response to antimicrobial therapy with prolonged hospitalization and complete recovery of the patient are similar to report from this center.<sup>[5]</sup>

As Oboegbulam *et al.*,<sup>[9]</sup> have reported that typhoid is endemic in South-East Nigeria with the rising number of cases in a certain period of the year, this case report demonstrated typhoid as cause of glomerulonephritis in an endemic typhoid area like Enugu, South-East Nigeria with co-morbidity of other complications like typhoid intestinal perforation.

### Conclusion

Atypical presentation of typhoid fever will result in delayed diagnosis and treatment. A high index of suspicion is necessary to identify all co-existing intestinal and extra-intestinal complications in order to reduce the morbidity and mortality from the disease. A meticulous approach is also required especially in a resource-limited setting.

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