

Tuberculosis presenting as septic shock in immunocompetent child: An unusual presentation

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ABSTRACT

As per latest Global TB Report (2018), an estimated 2.2 lakh children get tuberculosis (TB) each year in India and illness constitutes a very high global burden. Here we report an unusual case of a child aged 14 years (female), who presented to Emergency with complaints of cough and restlessness for the past 1 day. Working diagnosis of septic shock was kept and child was started on intravenous ionotropes, vasopressors, and an antibiotic. There was no significant history suggestive of TB. Patient was shifted to PICU and managed for shock accordingly. X-ray lung showed single right-sided cavitary lesion. Bronchoalveolar lavage was positive for acid fast bacilli, confirming the diagnosis of pulmonary TB. The patient was started on antitubercular drug regimen (ATT) for 6 months and showed significant improvement with complete resolution. Literature was searched for association of septic shock in tubercular patients as a presenting complaint, which is a rare entity.

Keywords: Child, septic shock, tuberculosis

Case Report

As per latest Global TB Report (2018), an estimated 2.2 lakh children get TB each year in India and illness constitutes a very high global burden.^[1] We are reporting a case of female child aged 14 years, weighing 60 kg presented to the Pediatric Emergency with complaints of cough and restlessness for the past 1 day. On examination, child was conscious and afebrile with vitals showing heart rate-118 bpm, respiratory rate-26/min and blood pressure-unrecordable. On examination, there was presence of crepitations on right upper zone. No organomegaly was seen. Lab investigations showed dimorphic picture with mild leucocytosis with normal platelet count. Renal and liver functions were grossly normal. There was no history of fever, weight loss, respiratory distress, night sweats, pain abdomen, or

blood loss from any site. No significant past medical history or family history was positive. Working diagnosis of septic shock was kept and child was started on intravenous ionotropes, vasopressors, and an antibiotic. Differential diagnosis initially included ectopic pregnancy or any trauma. After initial stabilization in emergency room child was shifted to ICU where child was managed conservatively. Ultrasound abdomen was done, which came out to be normal. When patient was shifted back to the ward, X-ray lung was done which showed single right-sided cavitary lesion [Figure 1], confirmed by CT scan [Figure 2]. Mantoux test and sputum for acid fast bacilli was negative. Later, bronchoalveolar lavage was planned and it was suggestive of presence of acid-fast bacilli, confirming the diagnosis of pulmonary tuberculosis. The patient was started on antitubercular drug regimen (ATT) for 6 months. The patient showed significant improvement with complete resolution of the lesion on chest X-ray on further follow-up. The ethical permission was obtained from Institutional Ethics Committee and a written informed consent was obtained from parents of the child for publication of this case report.

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Figure 1: X-ray lung showing single right-sided cavitary lesion



Figure 2: CT scan chest showing single cavitary lesion in right lung

Discussion

Appearance of Septic shock in an immunocompetent child with end result of MODS is an unknown entity and relatively rare complication of TB infection. It has been reported only in patients and that too in mostly adult population particularly those having underlying immunosuppressive clinical conditions like human immunodeficiency virus (HIV) infection and miliary tuberculosis.^[2] Usual symptoms of TB are productive/non-productive cough, mild dyspnoea, evening rise of temperature, weight loss, malaise or night sweats.^[3] There are some other reported manifestations of TB like not taking up tuberculin skin test with negative Mantoux Test, no formation of granuloma, extensive involvement of lung parenchyma, and extrapulmonary involvement of body organs. This case was missed early in its presentation because of these unusual features.^[2] There is an underlying pathogenesis of bacteremia releasing endotoxins in presence of Septic shock and in TB infection, it is because of release of tumor necrosis factors which in turn are stimulated by lipoarabinomannan from tubercular bacteria.^[2,4,5] Previously treatment of confirmed cases of pulmonary and extra-pulmonary tuberculosis constituted four drugs regimen consisting of isoniazid, rifampicin, pyrazinamide, and ethambutol for 2–3 months, dropping to isoniazid and rifampicin alone for an additional 3–4 months.^[6] As per Draft updated IAP RNTCP Ped TB Guidelines 2019, current anti-tubercular therapy includes 2 months administration of isoniazid, rifampicin, pyrazinamide, and ethambutol, followed by 4 months of three drug therapy (isoniazid, rifampicin, and ethambutol). Gachot *et al.* reviewed 12 adult patients having concomitant TB and HIV who required ICU admission at presentation and of these 12, three had tested positive for M. Tuberculosis and out of these 12, four patients were in shock requiring inotropic support.^[7] Kethireddy *et al.* observed that in patients with TB having septic shock, the mortality rate was 79% (versus 49% in those with septic shock not associated with tuberculosis) and recovery was seen in only one patient receiving anti-tubercular treatment.^[8] Michel *et al.* reported three cases of septic shock due to TB in non-HIV adult patients which evolved

to be fatal for all of them.^[9] In clinical settings patients with TB having serious manifestations like organ dysfunction require specialized ICU care in advanced settings. The core management principles in patients presenting with tuberculous septic shock involve use of antibiotics at presentation, judicious use of appropriate fluids, and if required support of vasopressors in maintaining perfusion; as initiated in this patient. In addition to this, specific anti-tubercular therapy should be initiated early. Due to presence of very high mortality rates in patients presenting with septic shock with an underlying immunosuppressive condition like TB if treatment is delayed beyond a certain period, it is of utmost importance to suspect and confirm the diagnosis so as to prevent mortality and morbidity associated with delayed diagnosis. So, primary care physicians should be vigilant about the rare presentations of TB such as septic shock and thus help in reducing the mortality in pediatric population.

Conclusion

Tuberculosis should be an important differential in Indian setup where it can present as any disease manifestation and is even difficult for expert clinicians to diagnose at the first place. At presentation, septic shock as a manifestation of TB is an unheard of, even where this disease is having high endemicity as in some parts of the world. So, such a rare entity should be suspected early as management may require not only anti-tubercular drug treatment, but also use of advanced supportive care.

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Conflicts of interest

There are no conflicts of interest.

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