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## LETTER TO EDITOR

**Blood Culture for Febrile Illnesses in Iron-Deficient Indian Children**

GARG P

The knowledge of epidemiology of infectious diseases especially in children in India is limited [1]. This is also true for meningococcal disease, which occurs both sporadically and in epidemics at regular intervals [2]. It is highlighted that in India majority of meningococcal cases occur in young adults and adolescents during epidemics [2],[3]. In India, the burden of unapparent infectious diseases, especially meningococemia, may be much more in pre-school children than earlier thought because iron-deficiency anaemia afflicts about three-fourths of school-going children, predisposing them to many infections [4],[5]. We report a case of acute, unsuspected, and mild meningococemia in a child presenting with a short history of fever without localisation and severe iron-deficiency anaemia. We report this case to highlight the importance of blood culture in innocuous looking febrile illnesses in children.

A 2-year-old male child presented in the emergency with a history of high-grade fever since 4 days without any localisation. There was no history of rash, drug intake, loose stools, yellowish discoloration of skin, dysuria, or bleeding from any site. There was no significant past or family history. General physical examination revealed an apparently normally grown, stable, and non-toxic looking child with severe pallor. Systemic examination was non-contributory. Blood investigations suggested severe iron-deficiency anaemia: haemoglobin 6 g/dl, haematocrit 19.8, serum iron 10 µg/dl (35–140 µg/dl), total iron-binding capacity

587 µg/dl (245–400 µg/dl), saturation 1.7%, reticulocyte count 3.2%, peripheral smear revealing moderate anisocytosis with predominantly microcytic and hypochromic cells, TLC 4500 cu/mm, platelet count 1.5 lacs, and normal haemoglobin electrophoresis. Serum widal, peripheral smear for malarial parasite, C-reactive protein, and electrolytes were within normal limits.

The child was started on empirical intravenous (IV) ceftriaxone after his blood culture was taken in view of persistent high-grade fever and received a packed cell transfusion. Antibiotics were ceased after 48 hours, as the child became afebrile and the blood culture was reported sterile. However, after another 3 days of incubation, laboratory report revealed significant growth of *Neisseria meningitidis* type b sensitive to all antibiotics. The patient was contacted and given IV ceftriaxone for another 4 days. Nitroblue tetrazolium reduction test, properdin factor, and complement levels to better establish a cause-effect relationship (between iron deficiency and meningococemia) were not done, as the child had already undergone a blood transfusion.

The above case was presented to us in May 2006 in the national capital region of India. There was no epidemic reported during this period. It is possible that this was a sporadic case; however, since the presentation was very innocuous and unsuspected, it is likely that there may be many more missed cases of mild meningococemia in the region due to poor active surveillance system. Had a blood culture not been done for this case, and the laboratory was not of high quality with culture facilities for *Neisseria*, the diagnosis would have easily been missed. It thus becomes imperative that we should have strong suspicion for meningococemia in children presenting with fever, especially during peak

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seasons of May to December in India, and consider blood culture a routine investigation. The case also highlights the susceptibility of children with severe iron deficiency to meningococcal infections. The phagocytic and bactericidal activities of leucocytes are dependent upon serum iron levels and are deficient in anaemic Indian children [4]. Considering the burden of iron-deficiency anaemia in pre-school Indian children, they are at high risk of meningococcal and other infections. Although cost-effective models from developed countries have suggested a complete blood count with selective blood culture for febrile children with occult bacteraemia, in developing countries where routine pneumococcal and meningococcal immunisations have not been included, a blood culture may be a most cost-effective option on an ambulatory basis [6]. In conclusion, any febrile illness in anaemic Indian children, especially those with severe anaemia, warrants a blood culture so as to avoid missing the diagnosis. This will also result in better elucidation of epidemiology of infectious diseases in Indian children.

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