CASE REPORT

SEVERE THROMBOCYTOSIS IN A NIGERIAN CHILD WITH SEPSIS: A CASE REPORT AND REVIEW OF LITERATURE

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ABSTRACT

Sepsis is a common cause of morbidity in children and is significantly associated with aberrations in platelet count.

Although thrombocytopenia has been frequently reported in children with sepsis, thrombocytosis has also been observed in a number of children. We present a case of a 38 month old female with sepsis and severe thrombocytosis. Patient was admitted on account of fever and passage of watery stool. Full blood count revealed leucocytosis and markedly elevated platelet count. She was commenced on intravenous third generation cephalosporins (Rocephin) and gentamicin, as well as zinc gluconate and antipyretics. Thrombocytosis resolved after a 14-day course of antimicrobial therapy.

Conclusion: severe thrombocytosis can occur in children with sepsis and has a poor prognostic factor. Treatment with appropriate antibiotics causes a relief of thrombocytosis in quite a number of cases.

KEYWORDS: 1. Sepsis 2. Thrombocytosis 3. Children

INTRODUCTION

Sepsis in children is a major public health concern, because of its prevalence and high mortality rate [(1)]. It is a syndrome caused by a dysregulated immune response to infection [(2)].

Sepsis can also involve non-immunologic mechanisms, which could be cardiovascular, neuroendocrine or metabolic [2]. Almost all organs and systems are affected by sepsis. The haematologic system is also adversely affected [3].

Platelets play a complex role in sepsis, as they are able to modulate not just their own function, but also that of surrounding cells [4]. During sepsis, coagulation cascades and inflammatory responses, together with endothelial damage, cause platelet activation, which can be stimulated also by direct interaction of platelets with pathogens [4].

Sepsis can lead to aberrations in platelet count. While thrombocytopenia has been most frequently associated with sepsis, the impact of thrombocytosis remains largely under reported [5].

Sepsis causes endothelial cell activation which in turn would lead to elaboration of prothrombotic factors and subsequent platelet activation. Activation of platelets would promote thrombosis/formation of neutrophil extracellular traps (NET). The net effect of these will include; clogging of microvasculature, reduced blood flow to vital organs and subsequent multiple organ dysfunction. [6]

Thrombocytosis associated with sepsis is referred to as reactive thrombocytosis and constitutes the vast majority of thrombocytosis encountered in clinical practice [7]. It is also a risk for increased morbidity in patients with sepsis [7].

We hereby present a case of markedly elevated platelet count in a Nigerian child with sepsis.

CASE PRESENTATION

Baby A.J. was a 38 month old female who presented with a high-grade fever of two (2) days' duration and frequent passage of watery stool of a day's duration. Fever was high grade, intermittent and temporarily relieved by analgesics.

Stool was non-bloody, non-mucoid, with an average frequency of four times per day. Nil history of vomiting, although there was markedly reduced appetite.

Relevant examination findings were: fever, (temperature- 38ºC) and tachycardia. Initial diagnosis was malaria and gastroenteritis. Child was admitted, and a full blood count (FBC) and malaria parasite (MP) were requested.

FBC Result: HB- 11g/dl, PCV- 33%, WBC- 40×10^3/L (Neutrophil 86%, Lymphocytes 9%, Monocytes 8%), and a platelet count of 769,000/mm^3. MP was negative.

The diagnosis was modified to Sepsis with a focus in the gastrointestinal tract.

Child was commenced on intravenous imipenem and gentamycin, IV fluids and zinc tablet.

A blood culture was also requested which did not yield any growth after ten days of incubation. A repeat FBC was done after 3days. Result was: Hb- 11g/dl, PCV- 33%, TWBC- 22,900/mm^3 (Neutrophil 80%, Lymphocyte 13%, Monocyte 7%), platelet count 982,000/mm^3. Due to the markedly elevated platelet count, a repeat FBC was requested after one day, in addition to blood film.

At this time, WBC was 23,400 (Neutrophil 81.4%, lymphocyte 21.1%), platelet count was now 706,000/mm^3. Blood film showed marked toxic granulation, thrombocytosis with inadequate platelet aggregation. No blast cells were seen.

Intravenous gentamycin was then replaced with intravenous ciprofloxacin. Patient became fever free on the 7th day of admission. Passage of watery stool resolved on the 8th day of admission.

She received antibiotics for a total duration of 10days and was discharged home. REPEAT FBC at discharge was: Hb- 10g/dl, PCV- 30%, TWBC- 9,000/mm^3 (Neutrophils- 45%, lymphocytes- 48%, Monocytes- 7%), platelet count- 402,000/mm^3.

DISCUSSION

Outside their role in blood coagulation, it is now known that platelets are able to induce the acute phase response to infection [8, 9].

As earlier alluded to, although thrombocytopenia is more frequently seen in children with sepsis, thrombocytosis has been reported too [5].

Reactive thrombocytosis is usually mediated by increased release of numerous cytokines in response to infections. These cytokines, Thrombopoietin and interleukin-6. Others are Il-13, Il-11, GM-CSF and erythropoietin [10].

Thrombocytosis could be classified as mild (platelet count between 450-700 $\times 10^9$/L), moderate (700-900 $\times 10^9$/L), severe (>900$\times 10^9$/L) and extreme (>1000 $\times 10^9$/L) [11].

Our index patient had moderate and severe thrombocytosis at different times.

Although no sex difference has been reported in the frequency of reactive thrombocytosis, Szuber et al found a female preponderance in patients younger than 40years of age [12]. Our index patient was female.

Furthermore, the frequency of reactive thrombocytosis is commoner in infants and young children [13]. Our index patient was 38 months old.

The most common infection associated with thrombocytosis is pneumonia [14]. However, our index patient had the GIT as focus of infection.

Reactive thrombocytosis, even when extreme, rarely is associated with thrombotic events [15]. Treatment of the underlying illness is the key to therapy [15].

The index patient did not have any thrombotic episode. She was treated with intravenous antibiotics and discharged home.

CONCLUSION

Thrombocytosis can occur in children with sepsis and is associated with increased morbidity. Treatment of the underlying infection promptly is key to therapy.

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