King's College Hospital NHS
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Treatment of Fever and Infection in Children with Transfusion Dependent Thalassaemia

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Treatment of Fever and Infection in Children with Transfusion Dependent Thalassaemia

This guideline is aimed at all children in King's College Hospital with significant thalassaemia who present with possible sepsis or a temperature>38.5^{0}C. The guideline applies to patients who are currently under the care of the Paediatric Haematology team. It is mainly aimed at being a tool for the medical team managing these patients, but any member of the multidisciplinary team may find it useful.

Background

Acute infection remains a major cause of death in thalassaemia patients. A vigilant approach to recognizing and treating serious infections will prevent unnecessary mortality. Patients should be educated on management of fever and acute symptoms, with advanced understanding of who to call and where to seek care. Children who are at particular increased risk of serious infection are those who are splenectomised, those who have iron overload, those being chelated with desferrioxamine, and those with semi-permanent venous access devices (Portacath, Hickman line). Gram-negative organisms are the major cause of bacteriaemia in thalassemia patients. Patients on deferiprone have an increased risk of neutropenia.

General

Children should be assessed as for any child with possible infection or fever. History and examination should be focused on identifying possible sources of infection and likely organisms. The child should be admitted to hospital if the temperature>38.5^{0}C or is systemically unwell and the following investigations performed. The paediatric haematology team should be informed of the patient's admission.

Initial investigation of the Febrile Thalassaemic Patient

- History to include details of iron chelation, central lines, diarrhoea, recent foreign travel and previous splenectomy
- Full clinical examination looking for any site of sepsis. Must include ears, throat and examination of any central venous access device for exit-site or tunnel infection, mucositis.
- Full blood, urea and electrolytes, liver function tests, blood glucose
- Electrocardiograph if tachycardia, irregular pulse, hypotension or history of palpitations
- Blood cultures from each lumen of the central venous line if present, using the initial 3-5ml discard for culture, or peripherally if no central line.
- Urine microscopy and culture.
- If indicated, serum for viral serology and EDTA sample for malaria screen.
- Swabs from sites of clinical infection only.
- CXR if symptomatic/chest signs.

Investigation for fever with acute diarrhoea and/or vomiting

- stool culture and sensitivities specifically requesting detection of *Yersinia enterocolitica* infection.

Empirical Treatment of Fever and Sepsis in Children with Thalassaemia

- Treatment should start urgently and within 1 hour of the child presenting with fever.
- Tazocin (piperacillin/tazobactam) 90mg/kg x 4/day
- Gentamicin 7mg/kg once daily (check level prior to third dose)
- Vancomycin (or teicoplanin as 2nd line) if child has pain/inflammation round an endoprosthesis or a tunnel infection
- The empirical regimen is the same irrespective of previous antibiotic courses unless there are known antibiotic resistance guiding recommendations for an individual patient.
- Use meropenem if meningitis suspected.
  Child 1month-12 years
  <50kg- 40mg/kg every 8 hours
  >50kg – 2g every 8 hours

Treatment if there is fever and diarrhoea or vomiting

Thalassemia patients have an increased risk of Yersinia enterocolitica if they are iron overloaded or taking desferrioxamine. This infection may present with fever, abdominal pain, and diarrhoea. Stool and blood cultures should be sent, but antibiotics should be started before results are available. In general, all chelation therapy should be stopped until the child has fully recovered. Ciprofloxacin is the antibiotic of choice, given intravenously until gastrointestinal symptoms have resolved.

- Ciprfloxacin 6mg/kg every 8 hours, intravenously

Co-amoxiclav or cotrimoxazole can be used if the patient has a known allergy to ciprofloxacin.

Transfusion Transmitted Infections

Patients with transfusion-dependent thalassaemia are at increased risk of transfusion transmitted infections, including hepatitis B, C and HIV. This is particularly true if the patient has received blood transfusions abroad, in countries without established safe blood supplies. This should be considered when assessing patients with acute febrile illness.

- All regularly transfused patients should have been vaccinated against hepatitis A and B
- Hepatitis serology should requested on all patients presenting with an an ALT>100 IU/l. If hepatitis is confirmed the paediatric Hepatology team should be contacted.
- If sepsis occurs following a blood transfusion, the possibility of bacterial or malarial contamination of the transfused blood should be considered.

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