

## CASE FOUR

**Short case number: 3\_28\_04**

**Category: Immune & Haematological systems.**

**Discipline: Paediatrics**

**Setting: General Practice\_rural**

**Topic: Anaemia\_nutritional**

### Case

Aaron Shakespeare is 15 months old, he presents with his mother Tracey. She is concerned that Aaron is a 'fussy' eater; he did not start solid food until 9 months of age and still prefers to have breast milk. He does drink cow's milk from a sipper cup, but still wants to be breast fed at least twice a day, usually before he goes to sleep. The early childhood nurse has commented in Aaron's 'blue book' that he looks pale, but is otherwise well. The nurse recommended to Tracey that Aaron commence "S26 toddler gold" but Tracey is not sure.

### Questions

1. You are concerned that Aaron may be anaemic, what are the key features of your history and examination and why?
2. Explain the changing requirements for iron in infancy and why this can predispose to iron deficiency anaemia.
3. You organise to meet Aaron and Tracey at the emergency department where there is an experienced phlebotomist who can take blood from Aaron. His results reveal a Hb 900 g/L and a hypochromic microcytic film. Outline further investigations that need to be undertaken to exclude a more serious cause for Aaron's anaemia.
4. No sinister cause is found and Aaron is discharged home on oral iron supplementation, outline the use of oral iron in iron deficiency anaemia and outline what you would explain to Aaron's mother.
5. Tracey asks what she should do about Aaron's diet, "*should I start the S26 toddler gold*" what would you explain to her?

### Suggested reading:

- South M, Isaacs D editors. Practical Paediatrics. 7<sup>th</sup> edition. Edinburgh: Churchill Livingstone;2012.
- Fisher RJ. Formulas and milks for infants and children. Medicine Today. vol 8 no 10, oct 2007. pg39-48.page 47.  
<http://medicinetoday.com.au/2007/october/feature-article/formulas-and-milks-infants-and-children>

## ANSWERS

**1. You are concerned that Aaron may be anaemic, what are the key features of your history and examination and why?**

The key features are that Aaron is a fussy eater who did not start solids till nine months, prefers breast milk and looks pale. Children with anaemia often present with pallor/reduced exercise tolerance → reflected as poor feeding in infants. Inadequate intake is a common cause → poor absorption of iron from cows milk/delayed introduction of mixed feeding (beyond 4-6 months) may predispose to iron deficiency.

**2. Explain the changing requirements for iron in infancy and why this can predispose to iron deficiency anaemia.**

Inadequate intake of iron is common in infants because additional iron is required for the increase in blood volume accompanying growth and to build up the child's iron stores. A one year old infant requires an intake of about 8 mg/day which is about the same as his father (9mg/day) but only about half of his mother (15mg/day).<sup>4</sup>

**3. You organise to meet Aaron and Tracey at the emergency department where there is an experienced phlebotomist who can take blood from Aaron. His results reveal a Hb 900 g/L and a hypochromic microcytic film. Outline further investigations that need to be undertaken to exclude a more serious cause for Aaron's anaemia.**

Further investigations would be:

- FBC,
- Reticulocyte count,
- Blood film,
- Serum bilirubin
- Serum ferritin level.

The bilirubin level is raised with haemolysis → thalassaemia/hereditary spherocytosis/sickle cell disease (diagnosed by HPLC high performance liquid chromatography or Hb electrophoresis). The bilirubin level is normal → iron deficiency blood loss.

**4. No sinister cause is found and Aaron is discharged home on oral iron supplementation, outline the use of oral iron in iron deficiency anaemia and outline what you would explain to Aaron's mother.**

Treatment of iron deficiency is with dietary advice and oral iron therapy for several months (to restore Hb to normal and replenish iron stores) –iron absorption is markedly increased when eaten with foods rich in vitamin c (fresh fruit and vegetables)

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<sup>4</sup> Lissauer T and Clayden G. Illustrated Textbook of Paediatrics 2007 Mosby Elsevier page 365.

**Tracey asks what she should do about Aaron's diet, "*should I start the S26 toddler gold*" what would you explain to her?**

After 1 year healthy children do not require formulas or supplements because by then they should be having a varied diet. At this age cows milk is recommended rather than infant formula. The use of a supplement will not rectify poor eating habits, also should be using a cup rather than a bottle because the bottle increases the risk of overconsumption → which can lead to overweight/obesity as well as iron deficiency and/or decrease appetite for other foods.