

Curiositas (Global Health)

In this edition of Curiositas we have a global health perspective on a range of interesting topics.

POSTGRADUATE QUIZ



1. What is the most obvious abnormality on the chest x-ray of this child who has recently moved to the United Kingdom from Sub-Saharan Africa?
2. What is the most likely underlying diagnosis and how would you manage them?

Dr Benjamin McNaughten (Paediatric trainee), Dr Paul Moriarty (Consultant in Paediatric Infectious Diseases, Royal Belfast Hospital for Sick Children), Dr Andrew Thompson (Consultant Paediatrician, Royal Belfast Hospital for Sick Children), Dr Thomas Bourke (Consultant Paediatrician, Royal Belfast Hospital for Sick Children).

HISTORICAL QUIZ

1. Who is this well-known lady and where does she currently reside?



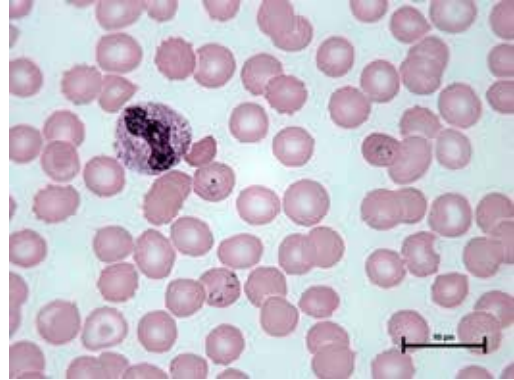
2. At what age did she die and what was most likely at the time to have been on her death certificate?

Dr Benjamin McNaughten (Paediatric trainee), Dr Thomas Bourke (Consultant Paediatrician, Royal Belfast Hospital for Sick Children), Dr Andrew Thompson (Consultant Paediatrician, Royal Belfast Hospital for Sick Children). Acknowledgements: Picture supplied by Professor William Thompson (Retired). Permission of use granted by Mr Patrick McLain from National Museums NI (NMNI)

UNDERGRADUATE QUIZ

A 27 year old male presents to hospital with a headache, fever and vomiting. He has recently returned from a holiday in Uganda. As part of his investigative workup, a blood film is performed.

1. What abnormalities can be seen on the blood film?



2. What is the most likely diagnosis?
3. How should this patient be managed?

Rachel Keown (4th year medical student, Queen's University Belfast), Anthony Thompson (Biomedical Scientist, Royal Belfast Hospital for Sick Children), Dr Paul Moriarty (Consultant in Paediatric Infectious Diseases, Royal Belfast Hospital for Sick Children), Dr Andrew Thompson (Consultant Paediatrician, Royal Belfast Hospital for Sick Children). Acknowledgements: Blood films supplied by Anthony Thompson (Biomedical scientist, Royal Belfast Hospital for Sick Children)

AND FINALLY....

1. What are these and why might you recommend feeding them to children in low-resource settings?



Dr Lynne Speirs (Paediatric Infectious Disease Fellow, GOSH, London), Dr Claire Waterson (Paediatric Infectious Disease Trainee, Royal Belfast Hospital for Sick Children). Acknowledgements: Pictures supplied by Dr Lynne Speirs (Paediatric Infectious Disease Fellow, GOSH, London)

ANSWERS See overleaf

CONSIDER CONTRIBUTING TO CURIOSITAS?

Please refer to 'Curiositas: Guidelines for contributors' <http://www.ums.ac.uk/curiositas.html> and email umj@qub.ac.uk with your ideas and submissions.



Curiositas: Answers

POSTGRADUATE QUIZ

1. The most obvious abnormality on this chest x-ray is the presence of miliary nodules.
2. Miliary nodules are characteristic of miliary tuberculosis (TB). Miliary TB is an uncommon pulmonary manifestation of TB. It represents widespread haematogenous dissemination of *Mycobacterium tuberculosis*. Approximately 1.5% of patients with TB are estimated to have miliary TB. The disseminated nodules consist of central caseating necrosis and peripheral epithelioid and fibrous tissue. Radiologically they are not calcified. This contrasts to the initial Ghon focus which is often visible on chest radiographs as a small calcified nodule. In the absence of central nervous system (CNS) involvement the patient should receive isoniazid (with pyridoxine), rifampicin, pyrazinamide and ethambutol for 2 months followed by isoniazid (with pyridoxine) and rifampicin for a further 4 months.¹ Attempts should be made to culture the pathogen. Children with pulmonary TB have a low bacillary load and do not expectorate well, making diagnosis from sputum samples difficult. Early morning gastric aspirates and bronchial washings are alternatives. In miliary TB, mycobacterial blood cultures may yield a pathogen. If the patient had neurological symptoms or signs they should be tested to exclude CNS involvement. If there is evidence of CNS involvement the course of isoniazid (with pyridoxine) and rifampicin should be extended to 10 months.¹ Treatment should be modified according to drug susceptibility testing.

National Institute for Health and Care Excellence (2016). Tuberculosis. NICE guideline [NG33]

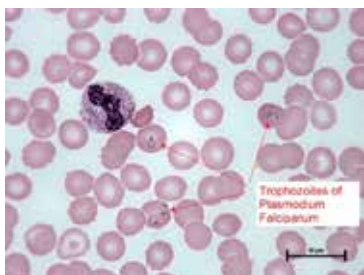
HISTORICAL QUIZ

This is Takabuti better known to most children growing up in Northern Ireland as the “mummy” in the Ulster Museum. She was first seen in the museum in 1835. From the inscriptions and hieroglyphs on the case it is known that she was a married lady of about thirty years of age who lived in the city of Thebes almost 2500 years ago.

Life expectancy in ancient Egypt was between 20 and 30 years but fluctuated at times of prosperity or famine. Females were more likely to die young due to complications of child birth. Cause of death was variable with infectious diseases and in particular tuberculosis claiming most lives. Water-borne infections such as typhoid and cholera were also endemic. If you managed to avoid war, starvation and infectious diseases there were always the snakes or Nile crocodiles to contend with!

UNDERGRADUATE QUIZ

1. Trophozoites of *Plasmodium falciparum* are noted within some of the erythrocytes.
2. The presence of trophozoites of *Plasmodium falciparum* in the blood film in combination with his non-specific clinical presentation and recent travel to a high-risk country makes malaria the most likely diagnosis. Malaria is the most commonly imported tropical disease in the UK with around 1300-1800 cases reported annually.¹ It is caused by the parasite *Plasmodium* with approximately three quarters of cases secondary to *Plasmodium falciparum*.
3. The patient should be admitted. Parasite count should be checked to assess the potential future



severity of the disease. Malaria caused by *Plasmodium falciparum* can be divided into two main categories; uncomplicated malaria and severe/complicated malaria. The features of severe or complicated malaria include:

- Impaired consciousness or seizures.
- Renal impairment (oliguria <0.4 ml/kg bodyweight per hour or creatinine >265 μmol/L).
- Acidosis (pH < 7.3).
- Hypoglycemia (<2.2 mmol/l).
- Pulmonary oedema or acute respiratory distress syndrome (ARDS).
- Haemoglobin <80 g/L.
- Spontaneous bleeding/disseminated intravascular coagulation.
- Shock (algid malaria i.e. BP < 90/60 mmHg).
- Haemoglobinuria (without glucose-6-phosphate dehydrogenase deficiency).
- Parasitaemia >10%.

There are three main treatment options for uncomplicated *falciparum* malaria: Artemisinin combination therapy (ACT), oral atovaquone-proguanil or quinine plus doxycycline.¹ ACT has been proven to be the most effective for removing the malaria parasites and is often considered the drug of choice.² Parenteral artesunate has shown to be a superior treatment over intravenous quinine in patients with complicated/severe malaria³. The patient should be given advice regarding secondary prevention of malaria for future travels and public health should be informed.

1. Lalloo DG et al. UK malaria treatment guidelines 2016. *Journal of Infection* (2016) **72**, 635-649
2. Sinclair D, Ani B, Donegan S, Olliaro P, Garner P. Artemisinin- based combination therapy for treating uncomplicated malaria. *Cochrane Database Syst Rev* 2009; (3). CD007483
3. Sinclair D, Donegan S, Isba R, Lalloo DG. Artesunate versus quinine for treating severe malaria. *Cochrane Database Syst Rev* 2012; **6**. CD005967

AND FINALLY...

Entomophagy (the practice of eating insects) is increasing worldwide. Edible grasshoppers (*Ruspolia nitidula*) are a delicacy in Uganda and many other East African countries and, in season,

are widely available¹. Recently it has been demonstrated that as well as being a tasty snack, grasshoppers are important source of protein. In Uganda, *R. nitidula* is processed by either sautéing, deep frying, or boiling followed by drying. Studies of composition have revealed 36-40% protein, 41-43% fat and 10-13% dietary fibre. The moisture content is lower than other major protein sources such as fish and meat, making them a more concentrated source of nutrients.

5.9 million children under the age of five years died in 2015 and malnutrition is thought to be an underlying cause in up to half of these deaths². Sharing knowledge of locally available protein rich food with caregivers is important to allow children to receive a balanced and healthy diet.

1. Ssepuuya, G., Mukisa, I., Nakimbugwe, D. Nutritional composition, quality and shelf stability of processed *Ruspolia nitidula* (edible grasshoppers). *Food Science and Nutrition*. 2017; **5**(1): 103-112.
2. World Health Organisation. World Health Statistics 2016. Monitoring Health for the SDGs. WHO 2016. [Accessed online 23rd April 2016] Available from: http://www.who.int/gho/publications/world_health_statistics/2016/en/



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