Paediatric Pearls

by Dr Julia Thomson, Paediatrician

April/May 2019

Monthly paediatric update newsletter for all health professionals working with children – put together by Dr Julia Thomson, Paediatric Consultant at Homerton University Hospital, London, UK. Housed at www.paediatricpearls.co.uk where comments and requests are welcome!

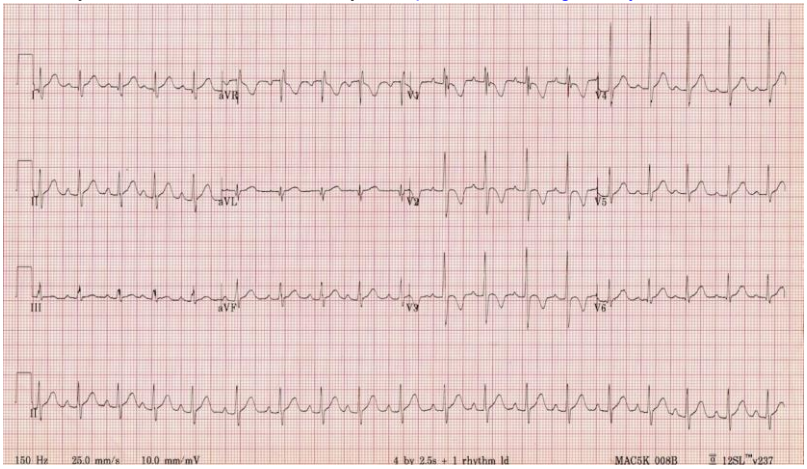
LESSONS FROM THE FRONT LINE: A very dehydrated 3-year-old was brought to the ED. Sodium and urea were high after 2 days of D & V. As is common in many UK paediatric EDs, she was started on iv fluids but, in the absence of shock, is this the best way to rehydrate a child? How good are we really at measuring U+Es, blood sugar and other auditable standards from NICE's 2015 guideline on iv fluids in children?

A meta-analysis in 2004 suggests: "Enteral rehydration by the oral or nasogastric route is associated with significantly fewer major adverse events and a shorter hospital stay compared with IV therapy and is successful in most children." Fonseca B et al. Enteral vs Intravenous Rehydration Therapy for Children With Gastroenteritis: A Meta-analysis of Randomized Controlled Trials. *Pediatr Adolesc Med*. 2004;158(5):483-490

The topic also features in BestBETs (https://bestbets.org/bets/bet.php?id=698) and the conclusion is the same – rehydrate via mouth or ng tube, not iv.

NICE's **Diarrhoea and vomiting caused by gastroenteritis in under 5s: diagnosis and management** (https://www.nice.org.uk/guidance/cg84) was looked at in 2018, no new evidence was found and so we should still be using the original 2009 guideline and – in the absence of shock - aiming to rehydrate enterally. Unfortunately, this guideline does not tell you (or the carers in their information sheet) how much to give! There are some worked examples at http://www.paediatricpearls.co.uk/wp-content/uploads/2019/06/Fluid-management-in-childhood-gastroenteritis.pdf.

PAEDIATRIC ECGs – What is normal? This is a normal ECG of a 2 year old, courtesy of the excellent ECG library at https://litfl.com/ecg-library/:



Normal variants within a paediatric ECG (find the variants in purple in the ECG above) include:

- ☑ Heart rate >100 beats/min
- ☑ Rightward QRS axis > +90°
- ☑ T wave inversions in V1-3 ("juvenile T-wave pattern")
- ☑ Dominant R wave in V1
- ☑ RSR' pattern in V1
- ☑ Marked sinus arrhythmia
- ☑ Slightly long QTc (≤ 490ms in infants ≤ 6 months)
- ☑ Q waves in the inferior and left precordial leads
- ☑ Short PR interval (<120ms) and QRS duration (<80ms)
- ☑ Slightly peaked P waves (< 3mm in height is normal if ≤ 6 months)

Feeling rusty when it comes to paediatric ECGs and arrhythmias? There are three forthcoming courses on this topic that you might be interested in:

1. Paediatric and Neonatal Cardiac Emergencies, Homerton University Hospital, London (in collaboration with Great Ormond Street Hospital), 22nd and 23rd July 2019
2. Rapid Interpretation of Paediatric ECG (RIPE) course, Barnsley, S Yorks, 10/06/19
3. Paediatric Cardiac Emergencies Course, Royal Brompton Hospital, London 17/06/19

Resources:

☛ Dickinson D. The normal ECG in childhood and adolescence. Heart 2005;91:1626–1630. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1769212/pdf/hrt09101626.pdf - great bed-time reading but not so useful on an ED shift

☛ https://litfl.com/paediatric-ecg-interpretation-ecg-library/ - great but quite long to work through on an ED shift. The same site has a fascinating library of adult and paediatric ECGs.

☛ http://learn.pediatrics.ubc.ca/body-systems/cardiology/approach-to-pediatric-ecg/ - 5 pages, invaluable crib sheet for an ED shift, paediatric outpatient clinic, GP surgery or clinical exam.

CHILDREN'S SAFEGUARDING SPOT – getting the language right…

"We are not mistakes on pages, we are awesome novels with unorthodox beginnings." TACT ambassador Solomon OB.

TACT (The Adolescent and Children's Trust) is the UK's largest fostering and adoption charity and voluntary agency (http://www.tactcare.org.uk/). They have a new report out on the terminology of care with some suggestions on how we might modify our lexicon (https://www.tactcare.org.uk/content/uploads/2019/03/TACT-Language-that-cares-2019_online.pdf):

Contact

We prefer: **Making plans to see our family; Family meet up time/Family time; Seeing Dad/Mum/Grandma/etc.**

> *"Contact should be changed to meeting with friends and family!"* Waltham Forest Young Person

> *"I would prefer 'seeing family'. Seeing family is normal for anyone but 'contact' makes it sound like it's not normal."* York Care Leavers Forum

> *"Contact means staying in touch with the people that you care about."* Waltham Forest Young People

> *"For me it would be 'golden time', because seeing your family is golden and it's the best time."* TACT Young Person

Difficult to place

We prefer: **Can't find a home good enough for them; Failed by the system**

> *"The phrase 'difficult to place' blames the child for a failure of the system."* Charity Social Worker

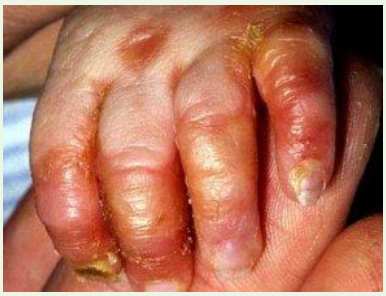
Drop out

We prefer: **Early school leaver**

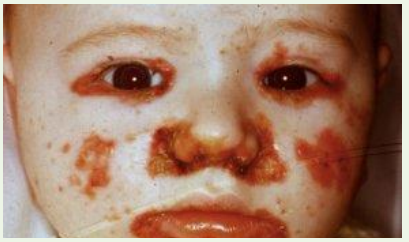
Dermatological manifestations of systemic disease by Dr Anusuya Kawsar, derm registrar at Barts Health NHS Trust: Acrodermatitis enteropathica

➢ can be congenital or acquired. Not uncommonly seen in the neonatal unit in ex-preterm babies at a few weeks of age. Serum zinc levels are low and supplementation leads to amelioration of skin symptoms and crying within a few days. Also seen in older children and adults with GI malabsorption and people in catabolic states eg. post trauma.

➢ mutations in the gene that codes for the zinc transporter lead to the rare autosomal recessive congenital form (https://www.dermnetnz.org/topics/acrodermatitis-enteropathica/). Primary acrodermatitis enteropathica is characterised by diarrhoea, an inflammatory rash around the mouth and/or anus, and hair loss. This presents at a few days to weeks of age in bottle-fed babies, slightly older in breastfed babies because the zinc in breast milk is more bioavailable than that found in formula. The inherited form used to be fatal until the discovery of zinc in 1973. Treatment is 1mg/kg/day zinc for life.



Erythematous patches of dry scaly skin evolving into crusted, blistered, pus filled and eroded lesions. There may be secondary bacterial infection – which can delay the diagnosis.
Sharp demarcation between affected area and normal skin
Affects mouth, anus, eyes, elbows, knees, hands and feet
Nails: paronychia or nail ridging
Hair: diffuse hair loss on scalp, eyebrows, eyelashes
Mouth: red glossy tongue, angular cheilitis, ulcers
Other features: conjunctivitis, sensitivity to light, diarrhoea, irritability and growth failure in babies



Pictures from https://www.dermnetnz.org