The sick neonate

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| emergency,onthepods,paediatrics

James talks to Dr Angela McGillvray about an approach to the sick neonate in the ED.

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About Dr Angela McGillvray

Dr Angela McGillvray is a staff specialist neonatologist at Royal Prince Alfred Hospital in Sydney. Angela completed her undergraduate training at the University of Edinburgh before commencing advanced paediatric training in Australia, at the Children's Hospital at Westmead. She has a Masters in Medical Education from the University of Sydney and is currently a PhD candidate studying severe neonatal jaundice. Angela's professional interests include trainee mentorship and high-fidelity interprofessional simulation-based training.

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With Dr. Angela McGillvray, Neonatologist, Royal Prince Alfred Hospital, New South Wales, Australia.

Introduction

It can be quite nerve-racking for both residents and more senior doctors to read a triage note for a neonate presenting to the emergency department. In this podcast, we discuss some general principles in the approach and management of the sick neonate.

Case

You are working in the emergency department when a 2-week-old boy is brought in by his parents with a fever to 38.5 C. His parents say that he has been more irritable today and is refusing feeds.

– 1. Are sick neonates just small sick children?

- No, they are different for a number of reasons!
- They have relatively immature immune systems compared to older children.
- They tend not to localise signs of infection in the same way as older children.
- They may have a normal or low temperature in the setting of serious bacterial infection or sepsis.

- They can deteriorate very quickly.
- They are much smaller than older children and have a greater percentage of total body surface area, which means they can lose heat more quickly.
- The perinatal history is very important to consider in determining the cause for the baby's illness, whether congenital or as a result of the birthing process.

2. Outline your assessment approach by the bedside

- **ABC**
    - Airway
    - Breathing, signs of respiratory distress including tachypnoea, intercostal recession, grunt.
    - Heart rate, central capillary refill, peripheral and central pulses.
    - AVPU (alert, responsive to voice, responsive to pain, unresponsive).
    - Check normal values for respiratory rate, heart rate and blood pressure.
    - Think about the potential causes of illness including: infection, congenital cardiac defects, other congenital abnormalities.
- **History**
    - Duration of illness
    - Infectious contacts
    - Oral intake
    - Output (number of wet nappies)
    - Perinatal history including gestational age at birth, type of delivery, APGARs, need for resuscitation, neonatal ICU or special care nursery.
    - Antenatal history including pre-eclampsia, gestational diabetes mellitus, UTI, group B strep, active infection with herpes simplex virus.
    - Immunisation status
    - Travel history
    - Take parental concerns seriously regardless of whether they are new or experienced parents!
- **Examination:**
    - Small babies should be managed in a Resuscitaire to keep them warm whilst they are being examined.
    - Head to toe system of examination
        - General inspection as above – note if the baby is able to be settled.
        - Inspect for rash on face, trunk, limbs, hands, nappy region.
        - Asses work of breathing.
        - Feel fontanelles.
        - Check central perfusion.
        - ENT
        - Respiratory: auscultate the chest for breath sounds, wheeze, crepitations.

- CVS: check central and peripheral pulses, auscultate for heart sounds.
- Abdomen and umbilicus
- Genitals

3. Investigations

- **Full septic workup**
  - Bloods
    - FBC
    - EUC
    - CRP
    - VBG and lactate
    - Blood culture
  - BSL
  - CXR
  - NPA
  - Urine MC&S
  - LP (if the baby is toxic, do not delay antibiotics!)

4. Management

- All febrile 2 week old babies need to be admitted to the ward.
- Commence empiric antibiotics – check guidelines!
- Fluid resuscitation if required (10-20 mL per kilo bolus) – be careful not to overload small babies!
- Babies require more glucose than children and adults in their maintenance fluids (usually 0.9% NaCl + 10% glucose).
- Call the paediatrician for help if you feel out of your depth.
- NETS is available over the phone if you think the baby will need transfer to a tertiary centre.

Take home messages

- Don’t take the watch, wait and see approach in febrile neonates less than 3 months old.
- Do a full septic workup.

- Commence empiric antibiotics early.
- Be cautious with fluid resuscitation.
- Call for help early.
- Consult the excellent resources available online via the Sydney Children's Hospital and Royal Children's Hospital in Melbourne.

References

- The Sydney Children's Hospital Network – Clinical Policies
- The Royal Children's Hospital Melbourne – Clinical Practice Guidelines

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