

Meningococcal Septicaemia – Children

Presentation

Features include fever, myalgia, rigors and confusion. By contrast with neurological features seen in meningitis, those with septicaemia usually have a clear sensorium. Early on clinical features are fever, toxic appearance and tachycardia. With progression, features alter to circulatory failure and shock with poor peripheral perfusion and the gap between core and peripheral temperature increases. Oliguria/anuria may develop and lethargy and confusion leading to coma may result as cerebral perfusion diminishes.

Please note that hypotension is not a feature of shock in children until a pre-terminal stage is reached, even in the face of significant reduction in circulating volume.

This is a most fulminant infection. Some children may be symptomatic for several days, others die in <12 hours from the onset of first symptom. Pharyngitis may precede onset in some but others simply get ill and hot. Early recognition is the key to success with requires careful examination of febrile children in a good light, looking for evidence of a purpuric rash in those who are more ill. About 10% of patients develop an initial maculopapular rash (blanches on pressure) prior to the onset of purpura (will not blanch on pressure); in others no rash is present, however, look at the conjunctivae since one purpuric spot in an ill, febrile child is enough to begin therapy.

Management

Suspicion goes more than 50% of the way towards actual diagnosis.

Assess ABC and treat. Get help

Administer IV ceftriaxone 80mg/kg– (max 2-4g, over 2-4min)
(Can also consider cefotaxime 100mg/kg (max 2g) and
benzylpenicillin 50mg/kg (max 2g)).

The meningococcal packs are in the paediatric resus area.

Do not send PCR from the Emergency Department

Rashes – Children (see Ill child)

- Children with non-blanching rash and sick septic children with non-specific rashes should be treated for meningococcal disease.
- Discharge plans for children with rashes must include Glass Test Advice(GTA)

Formatted: Bullets and Numbering

Formatted: Bullets and Numbering

Colour textbooks are invaluable:

- Clinical Dermatology Illustrated (Patient advice leaflets are available for photocopying)
- A Regional Approach : Reeves

Formatted: Bullets and Numbering

Formatted: Bullets and Numbering

Key Facts are given in the table below

<u>Condition</u>	<u>Organism</u>	<u>Clinical Presentation</u>	<u>Treatment</u>
<u>Impetigo</u>	<u>Group A Strep</u>	<u>Vesicles becoming unroofed</u> <u>Honey crust</u>	<u>Polyfax</u> <u>Fucidin Ointment (Oral Fluclox)</u>
<u>Mild Cellulitis</u>	<u>Strep or Staph</u>	<u>Warm, red, swelling</u>	<u>Co-Amoxiclav</u>
<u>Severe cellulitis</u>	“ – ”	<u>Above +Systemic illness or periorbital involvement</u>	<u>ADMIT FOR IV TREATMENT OR IV NURSES</u>
<u>Erythema Multiforme</u>		<u>Target lesions incl. Palms & sole</u>	<u>Supportive</u>
<u>Stevens Johnson Syndrome</u>		<u>Above + mucous membrane</u>	<u>ADMIT</u>
<u>Urticaria</u>	<u>Allergic Reaction</u>	<u>“Hives” or nettle rash</u>	<u>1% HC cream</u>
<u>Drug Eruption</u>		<u>Any rash + drug Hx</u>	

PAEDIATRIC SKIN AND INFECTIOUS DISEASES

<u>Scabies</u>	<u>Scarcoptes scabiei</u>	<u>Papules or nodules esp flexor creases</u> <u>Burrows between fingers</u>	<u>Malathion or Permethrin</u> <u>+Advice sheet from CI Derm Ill.</u>
<u>Fifth Disease</u>	<u>Parvovirus</u>	<u>Slapped Cheek</u>	
<u>Kawasaki Syndrome</u>		<u>Erythema, sick, conjunctivitis, mucositis, peeling from fingers or toes</u>	<u>ADMIT</u>
<u>Toxic Shock Syndrome</u>	<u>Staph</u>	<u>Erythema, watery diarrhoea, shock</u>	<u>Flucloxacillin</u>
<u>Scarlet fever</u>	<u>Group A Strep</u>	<u>Erythema, strawberry tongue</u>	<u>Penicillin</u>
<u>Viral Exanthem</u>		<u>Pin prick rash or pimples. URTI or vague illness.</u>	
<u>Chickenpox</u>	<u>Varicella Zoster</u>	<u>Vesicles on trunk</u>	<u>Risk to pregnant mums- refer to GP for serology/ immunisation</u>
<u>Primary Herpes Stomatitis</u>	<u>H. Simplex</u>	<u>Extensive oral ulcers</u>	<u>Acyclovir</u> <u>Mouthwash</u>
<u>Post-primary “</u>	<u>“</u>	<u>Cold sores, lip ulcers</u>	<u>Acyclovir</u> <u>Mouthwash</u>
<u>NAI</u>		<u>Bizarre marks, burns</u>	<u>Child protection guidelines</u>
<u>Meningococcal</u>		<u>Non-blanching rash</u> <u>May be extremely subtle at first</u>	<u>IMMEDIATE TREATMENT OR SENIOR OPINION FOR ALL NON-BLANCHING RASHES</u>

Assessing Pyrexia in Children (see ABC Seriously Ill Child, Triage, Vomiting and Diarrhoea)

“Time and observations sometimes help the art of medicine..”

Unwell pyrexia children must be taken to resus immediately – the paediatric registrar must be contacted and you should follow the septic child protocol.

High temperatures are very common in childhood and you are going to see lots of cases while working in the Emergency Department. The parental concern is always meningitis – this should be your main concern as well! Although all children should be seen very promptly there is no rush if your initial assessment excludes serious illness. It is a good idea to keep the child in the department for an hour or two if discharge is a possibility but you are not sure. You can tell the child’s parents that you are going to keep him/her in the Emergency Department for a period of observation.

Initial Action:

- The child should have been given an antipyretic by the triage nurse. Make sure that their clothes are removed and that they are cooling down.
- Children less than 90 days old and unwell children/pyrexia >39°C should have topical anaesthetic cream applied in triage as white cell count will be needed later.
- Talk to the child’s parents and listen to what they tell you.
- Look at the child and record whether they are well/unwell/playing/listless, etc.
- Record cap refill (e.g., CRT <2secs), SaO₂, respiratory rate and temperature.
- Look everywhere for a non-blanching rash. If a purpuric rash is found – even one spot – treat as meningococcal disease and follow the meningococcal protocol. Don’t forget that a significant proportion of MCD cases have no rash or a vague blanching rash.
- Carry out a good head-to-toe examination including most importantly an ENT examination, since the commonest cause of pyrexia will be an upper respiratory tract infection (but remember that red ear drums may be due to a high temperature or crying).
- If no obvious cause for the fever is found urinalysis must be carried out and a specimen sent to the lab for direct microscopy. Chest X-ray should be considered and is mandatory if there is any abnormality of respiratory rate or SaO₂.

Formatted: Bullets and Numbering

Admitting or discharging:

- Less than 28 days old – admission is always mandatory.
- 28 days to 90 days – if temperature responding, white cell count <15,000 and chest X-ray normal, they can be discussed with the paediatric registrar to assess suitability for discharge.
- Older than 90 days – assessment becomes more reliable so children older than three months may be discharged by the Emergency Department doctors if well.

Formatted: Bullets and Numbering

The bottom line is if you are worried or if the child looks unwell admit.

Table 1 Traffic light system for identifying likelihood of serious illness

	Green – low risk	Amber – intermediate risk	Red – high risk
Colour	<ul style="list-style-type: none"> • Normal colour of skin, lips and tongue 	<ul style="list-style-type: none"> • Pallor reported by parent/carer 	<ul style="list-style-type: none"> • Pale/mottled/ashen/blue
Activity	<ul style="list-style-type: none"> • Responds normally to social cues • Content/smiles • Stays awake or awakens quickly • Strong normal cry/ not crying 	<ul style="list-style-type: none"> • Not responding normally to social cues • Wakes only with prolonged stimulation • Decreased activity • No smile 	<ul style="list-style-type: none"> • No response to social cues • Appears ill to a healthcare professional • Unable to rouse or if roused does not stay awake • Weak, high-pitched or continuous cry
Respiratory		<ul style="list-style-type: none"> • Nasal flaring • Tachypnoea: <ul style="list-style-type: none"> – RR > 50 breaths/minute age 6–12 months – RR > 40 breaths/minute age > 12 months • Oxygen saturation ≤ 95% in air • Crackles 	<ul style="list-style-type: none"> • Grunting • Tachypnoea: <ul style="list-style-type: none"> – RR > 60 breaths/minute • Moderate or severe chest indrawing
Hydration	<ul style="list-style-type: none"> • Normal skin and eyes • Moist mucous membranes 	<ul style="list-style-type: none"> • Dry mucous membrane • Poor feeding in infants • CRT ≥ 3 seconds • Reduced urine output 	<ul style="list-style-type: none"> • Reduced skin turgor
Other	<ul style="list-style-type: none"> • None of the amber or red symptoms or signs 	<ul style="list-style-type: none"> • Fever for ≥ 5 days • Swelling of a limb or joint • Non-weight bearing/ not using an extremity • A new lump > 2 cm 	<ul style="list-style-type: none"> • Age 0–3 months, temperature ≥ 38°C • Age 3–6 months, temperature ≥ 39°C • Non-blanching rash • Bulging fontanelle • Neck stiffness • Status epilepticus • Focal neurological signs • Focal seizures • Bile-stained vomiting

CRT: capillary refill time
RR: respiratory rate

Table 2 Symptoms and signs of specific diseases

Diagnosis to be considered	Symptoms and signs in conjunction with fever
Meningococcal disease	<p>Non-blanching rash, particularly with one or more of the following:</p> <ul style="list-style-type: none"> • an ill-looking child • lesions larger than 2 mm in diameter (purpura) • CRT \geq 3 seconds • neck stiffness
Meningitis ¹	<ul style="list-style-type: none"> • Neck stiffness • Bulging fontanelle • Decreased level of consciousness • Convulsive status epilepticus
Herpes simplex encephalitis	<ul style="list-style-type: none"> • Focal neurological signs • Focal seizures • Decreased level of consciousness
Pneumonia	<ul style="list-style-type: none"> • Tachypnoea, measured as: <ul style="list-style-type: none"> – 0–5 months – RR > 60 breaths/minute – 6–12 months – RR > 50 breaths/minute – > 12 months – RR > 40 breaths/minute • Crackles in the chest • Nasal flaring • Chest indrawing • Cyanosis • Oxygen saturation \leq 95%
Urinary tract infection (in children aged older than 3 months) ²	<ul style="list-style-type: none"> • Vomiting • Poor feeding • Lethargy • Irritability • Abdominal pain or tenderness • Urinary frequency or dysuria • Offensive urine or haematuria
Septic arthritis/osteomyelitis	<ul style="list-style-type: none"> • Swelling of a limb or joint • Not using an extremity • Non-weight bearing
Kawasaki disease ³	<p>Fever lasting longer than 5 days and at least four of the following:</p> <ul style="list-style-type: none"> • bilateral conjunctival injection • change in upper respiratory tract mucous membranes (for example, injected pharynx, dry cracked lips or strawberry tongue) • change in the peripheral extremities (for example, oedema, erythema or desquamation) • polymorphous rash • cervical lymphadenopathy
<p>CRT: capillary refill time RR: respiratory rate</p>	
<p>¹ Classical signs (neck stiffness, bulging fontanelle, high-pitched cry) are often absent in infants with bacterial meningitis. ² Urinary tract infection should be considered in any child aged younger than 3 months with fever. See 'Urinary tract infection in children' (NICE clinical guideline, publication expected August 2007). ³ Note: in rare cases, incomplete/atypical Kawasaki disease may be diagnosed with fewer features.</p>	