NON-BLANCHING RASHES

Learners Guide

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PRE-READING/LISTENING FOR LEARNERS

Podcasts

DFTB Podcast – How to use the clinical signs of meningitis

Peds Cases - Meningitis

Two Paeds in a Pod – Managing non-blanching Rashes

Articles

Approach to rashes

EMDocs - What's that Rash? An approach to dangerous rashes based on morphology

DFTB - Petechiae in Children - the PIC Study

OUTLINE

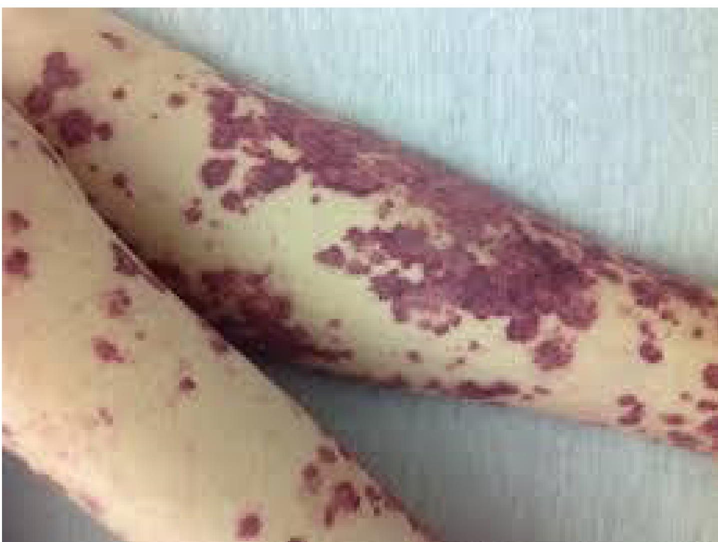
- **Pre-reading for learners**
- **Basics**
- **Case 1: Meningococcal sepsis (20 min)**
- **Case 2: Immune thrombocytopenic purpura (ITP) (15 min)**
- **Case 3: Non-accidental injury (10 min)**
- **Case 4: Henoch-Schonlein Purpura (20 min)**
- **Quiz**
- **5 take home learning points**

CASE 1: MENINGOCOCCAL SEPSIS

(based on a case from EMDocs - **EMDocs -The Sick Meningitis Patient – From Bad to Worse)**

James, a 13-year old boy, presents to the ED with his father. His father reports that before leaving for class the patient was complaining of slight headache and body aches. James went to school, but his teacher phoned his parents at 11am to come and collect him as he was unwell. She said he looked sweaty, was warm to touch, was complaining of neck pain and was saying things that didn't make sense.

On examination you notice he has extensive purpura over both thighs and abdomen. He is hypotensive with a BP of 80/40 and tachycardic with a HR of 130 bpm.

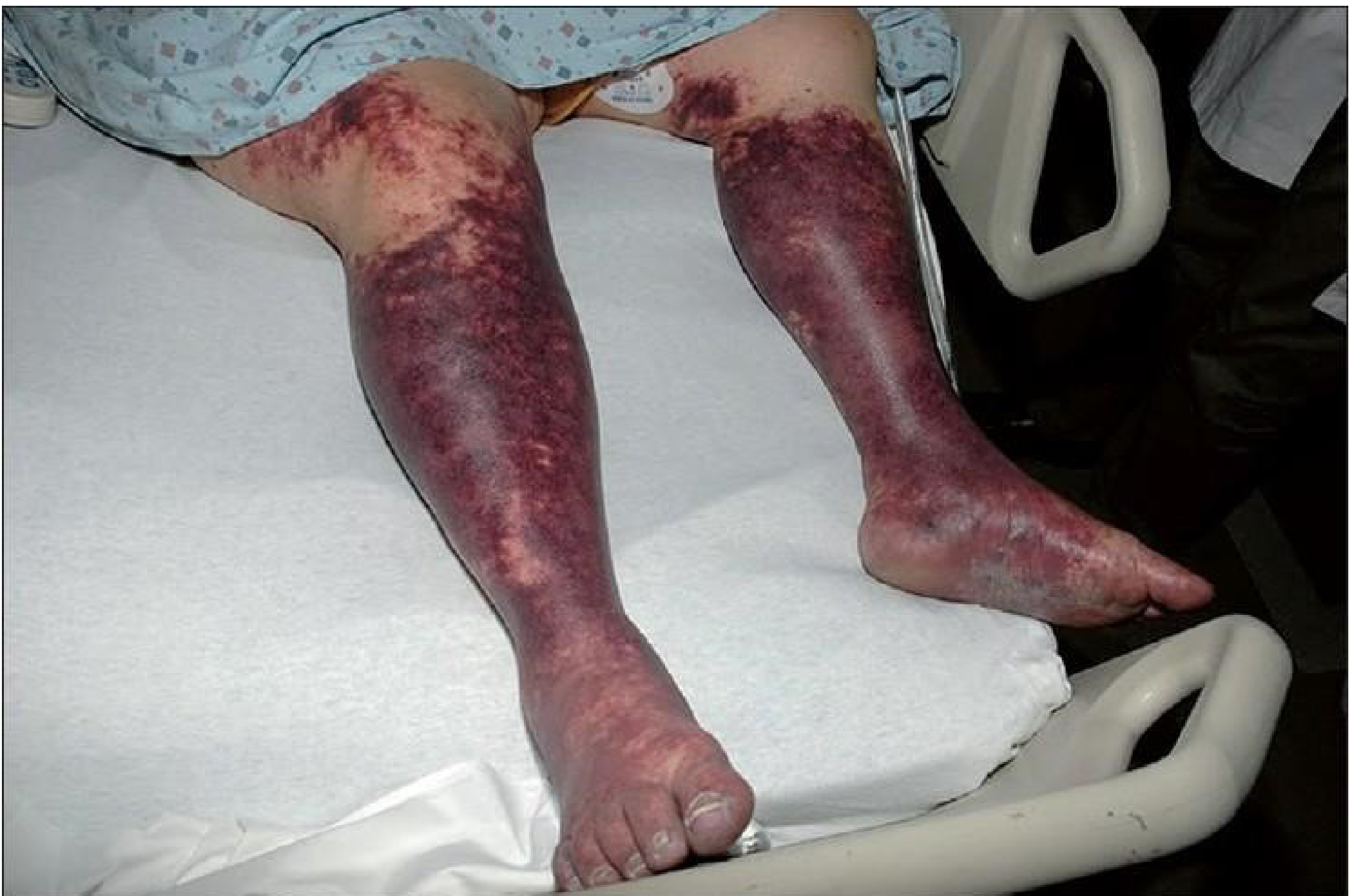


(Image used with gratitude from Wikipedia.org)

What is the most likely diagnosis?
What is the most likely organism causing this?

What percentage of these patients present with the classic petechial/purpuric rash?
What investigations would you like to do?
What treatment would you like to commence?
What is an extensive rash an indicator of?
James, over develops the following rash. What is it? How does this influence his prognosis? How would you like to treat it?
What other complications of bacterial meningitis might occur?
One of the nursing staff ask you to review James as his eye "looks funny". On exam you diagnose a unilateral 6th neve palsy. What has happened? Apart from the dexamethasone which you have already given, what other strategies could you employ to reduce intracranial pressure (ICP)?
In terms of the safety of yourself and your colleagues is there anything you need to consider?
James' mum is tearful and tells you she is sure James is up to date with all his vaccinations. **What can you tell her about the meningococcal vaccine?**

James then develops the following rash. What is it? How does this influence his prognosis? How would you like to treat it?



(Image used with gratitude from Journal of Postgraduate Medicine (jpgmonline.com))

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On exam you diagnose a unilateral 6th neve palsy.
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CASE 2: IMMUNE THROMBOCYTOPENIC PURPURA (ITP)

(Case from DFTB - **DFTB - ITP**; treatment from UpToDate - **UpToDate - ITP in Children)**

Maddie, a 4-year-old girl presents with bruising over her legs, trunk and face. Mum has noticed them appear over the last week. She has been completely well with no other symptoms. There is no history of trauma. After an anxious 1 hour wait, the bloods are back-Hb 113, WCC 7.3, Plt 8 x 109/L.

What is the most likely diagnosis?

Could it be anything else?

What other symptoms and signs would you like to know about?

Are there any scoring systems you could use to rate the severity?

What investigations would you like to do as part of your workup?
In what situation would you like to do a bone marrow aspirate?

What treatment should we use?

When should Maddie be admitted to hospital?

Her parents are asking when the rash/bruising will resolve. What will you tell them?

What do you need to advise the parents to look out for?

When should follow up for Maddie be arranged for?

Her parents are very concerned that Maddie will develop chronic ITP and wonders if she receives treatment now can this be prevented. What will you tell them?

CASE 3: NON-ACCIDENTAL INJURY

(based on case from St. Emlyn's Blog - **Don't Be Rash – Petechiae in Well Kids at St Emlyn's)**

Daisy, a 6-month-old girl, is brought by mum to the ED with a cluster of non-blanching spots to her right lower leg noticed while bathing her. She has a mild cough and snotty nose but is otherwise well – there is no history of fever and she is feeding well without diarrhoea or vomiting and with normal urine output. There is no history of trauma, no family history of coagulopathy, and an uncomplicated birth history. She is up-to-date with his immunisations and has never needed to attend ED before.

Examining her, you find a cluster of non-blanching spots, around five discrete lesions, approximately 2mm in diameter which do not disappear under pressure to the capillary bed. The rest of the examination is normal, apart from a runny nose. No other petechiae could be identified on top-to-toe examination. Her obs are normal.

Do you want to do blood tests on Daisy?

What are the causes of petechiae in children?

What factors in the history and presentation might make you suspicious of NAI?

It is always important to consider the child's age and their developmental milestones. **In Daisy's case what are they?**

What is a normal pattern of bruising in children?

CASE 4 – HENOCH-SCHOENLEIN PURPURA

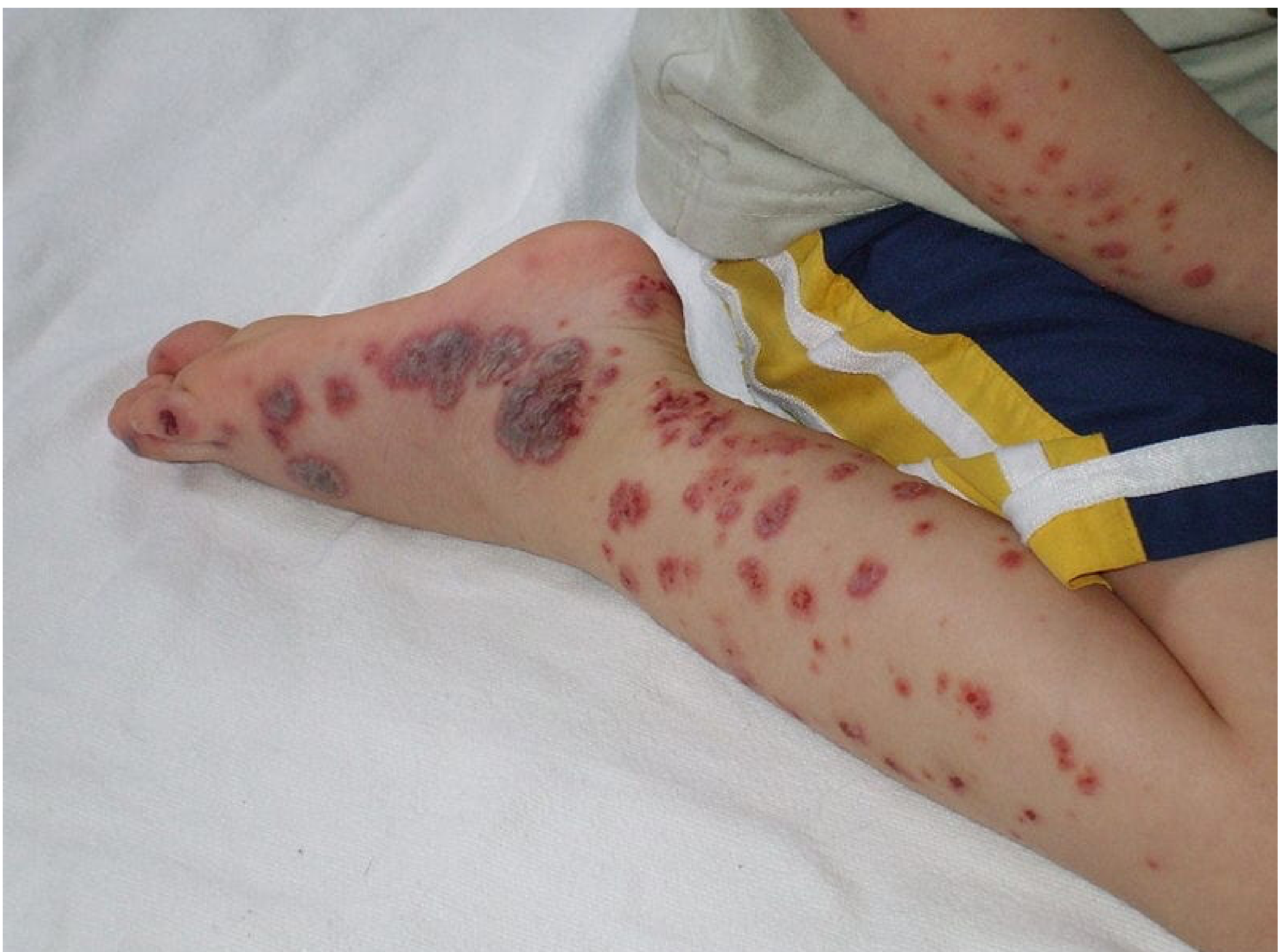
(based on case from LITFL - **LIFTL - Horrible Spots and Pain**)

A 4 year-old boy is brought to the emergency department by his parents with a history of increasing numbers of red spots on his legs over the past 6 days. They took him to two different family doctors and have tried various creams. The spots have spread to his buttocks and his arms, and now his legs are sore and look swollen. He has also had abdominal pains.

On examination he looks well with age-appropriate vital signs, but he is reluctant to move his lower limbs.

A urine dipstick shows 2+ RBCs.

His rash looks like this:



What is the diagnosis?

What other symptoms not already mentioned would you look for?

What are the differentials?

What investigations would you like to do?

In what circumstances would you like to admit Jack to hospital?

When would you speak to a nephrologist?

What complications can occur?

Jack's mum is wondering what the usual time course of the illness is.

Can you counsel her on what to expect?

What is your management?

What is the role of steroids?

Question 1

Which of these is a sign of raised ICP?

A - Diarrhoea

B - Vomiting

C - Non-blanching rash

D - Thrombocytopenia

Question 2

Which of the following can be an appropriate treatment for ITP?

A - Tranexamic acid

B - Steroids

C - Platelet infusion

D - All of the above

Question 3

Which of the following is not a side-effect of HSP?

A - Intussusception

B - Cholecystitis

C - Hearing loss

D - Rheumatic fever

Question 4

Which of the following would make you suspicious of NAI?

A - Bruising on the knees of a 5-year-old

B - Delay in presentation of the injury

C - Petechiae on the lower limb of a 6-month-old

D - Both B and C

Question 5

Which of the following investigations is sensitive for diagnosis of invasive meningococcal disease?

A - Blood cultures

B - DNA PCR

C - CT head

D - Skin scrapings

5 practical take home tips

1. Recognising if a child is toxic or non-toxic is one of the most important steps in managing a child with a non-blanching rash

2. Meningococcal sepsis is a condition with high mortality which should not be missed – have a high index of suspicion!

3. A period of observation may be an appropriate course of action in itself

4. Always check the urine for haematuria

5. Do not forget to consider non-accidental injury in a child with a non-blanching rash

REFERENCES

DFTB Podcast – How to use the clinical signs of meningitis

Peds Cases - Meningitis

Two Peads in a Pod – Managing non-blanching Rashes

EMDocs - What's that Rash? An approach to dangerous rashes based on morphology

LITFL - Perilous Pinhead Polka-dots

The Royal Children's Hospital Melbourne – Fever and Petechiae Flowchart

EMDocs -The Sick Meningitis Patient – From Bad to Worse

UpToDate - Bacterial meningitis in children: Dexamethasone and other measures to prevent neurologic complications

UpToDate - Clinical manifestations of meningococcal infection

UpToDate - Disseminated intravascular coagulation in infants and children

DFTB - ITP

UpToDate - ITP in Childrenphology

Pediatric EM Morsel - Wet Purpura and ITP

The Royal Children's Hospital Melbourne – Fever and Petechiae Flowchart

Blood - Intravenous immunoglobulin vs observation in childhood immune thrombocytopenia: a randomized controlled trial

DFTB - Childhood Immune Thrombocytopenia: To treat or not to treat?

LIFTL - Horrible Spots and Pain

DFTB - HSP –Are Steroids helpful in preventing neuropathy?

St. Emlyns – Petechiae in the well child

DFTB - Petechiae in Children - the PIC Study