Fever after Tropical Travel

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Learning Objectives

1. Identify the different infections in children after travel to a tropical area.

2. Compare & contrast the different infections in children after travel to a tropical area.

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Fever after Tropical Travel

1.9 million children travel overseas each year.

The most common reported health problems among children are:

a. diarrheal illnesses
b. malaria/mosquito borne diseases

CDC Health Information for International Travel 2010

Child with Fever

5 year old black male presented to ER with 3 day history of fever and pallor. PE findings pertinent for hepatosplenomegaly. The child is non-toxic looking. Travelled to Africa 6 weeks ago.

Diagnosis?

1. Hepatitis B virus
2. Salmonella typhi
3. Dengue virus
4. Malaria
What species of malaria?

1. P. vivax
2. P. ovale
3. P. malariae
4. P. falciparum

Child with Fever

6 year old child who developed fever and chills for 2 days associated with 2 episodes of diarrhea. Presented to the ER comatose. Travelled to Africa 5 weeks earlier. PE findings: comatose, pallor and hepatosplenomegaly. No neck rigidity. Labs were pertinent for hemoglobin of 4 gm/dl, platelets 78,000, glucose 35 mg/dl, BUN 65, creatinine 4 umol/l. PT, PTT and electrolytes were normal.

Diagnosis?

1. Severe acute gastroenteritis
2. Bacterial meningitis
3. Dengue fever
4. P. falciparum malaria

Peripheral smear
What Species of Malaria

1. P. malaria
2. P. vivax
3. P. ovale
4. P. falciparum

Malaria Distribution

4 species of malaria:
- P. falciparum - worldwide
- P. malariae - worldwide
- P. vivax - infrequent in sub-Saharan Africa but common elsewhere
- P. ovale - Africa, Asia, Oceania
- P. knowlesi - Southeast Asia

Malaria Distribution

Distribution of Anopheles mosquito in the U.S.
What is the deadliest malaria?

1. P. malariae
2. P. ovale
3. P. vivax
4. P. falciparum
5. P. knowlesi

Manifestations of Malaria

6 year old child who developed fever and chills for 2 days associated with 2 episodes of diarrhea. Presented to the ER in comatose. Travelled to Africa 5 weeks earlier. PE findings: comatose, pallor and hepatosplenomegaly. No neck rigidity. Labs were pertinent for hemoglobin of 4 gm/dl, platelets 78,000, glucose 35 mg/dl, BUN 65, creatinine 4 mg/dl. PT, PTT and electrolytes were normal.

Malaria Drug Resistance Distribution

Diagnostic tests

- Thick smear
- Thin smear
- Histidine rich protein HRP-2
Treatment

Chloroquine sensitive: chloroquine

Chloroquine resistant:
quinine + doxycycline/clindamycin
atovaquone-proguanil
artemether-lumefantrine
use IV quinidine o artesunate if does not tolerate oral

For updated treatment guidelines www.cdc.gov/malaria/diagnosis/_treatment/tx_clinicians.htm

Primaquine is indicated in which type of malaria?

1. P. falciparum
2. P. knowlesi
3. P. vivax and ovale
4. P. malariae

Malaria Prophylaxis

Chloroquine sensitive areas- chloroquine

Chloroquine resistant-
Mefloquine
Doxycycline
Atovaquone-proguanil

http://www.cdc.gov/malaria/travel/drugs_hcp.htm

Child fever and rash

5 year old boy developed fever for 5 days associated with headache, rashes and muscle pain. Started to improve & has been afebrile for 24 hours. Frequent traveller to Caribbean for the past 3 years and travelled back one week ago. Presented to ER obtunded, with petechiae & epistaxis. No nuchal rigidity. BP 60/40, HR 145/min, RR 40/min. Platelet count 30,000, Hematocrit 48. PT &PTT prolonged, liver enzymes elevated.
Diagnosis

1. Bacterial meningitis
2. Malaria
3. Dengue fever
4. Typhoid fever

Geographic distribution of dengue

Dengue in Americas

Rash of Dengue Fever
Manifestations of Dengue

5 year old boy developed fever for 5 days associated with headache, rashes and muscle pain. Starting to improve & has been afebrile for 24 hours. Frequent traveller to Caribbean for the past 3 years and travelled to Caribbean one week ago. Presented to ER obtunded, with petechiae & epistaxis. No nuchal rigidity. BP 60/40, HR 145/min, RR 40/min. Platelet count 30,000, Hematocrit 48, PT & PTT prolonged, liver enzymes elevated.

Diagnostic Test

Serology
Viral culture

Management of Dengue Shock Syndrome

Aggressive ICU management
Fluids, Fluids, Fluids

Fresh Frozen Plasma administered if hematocrit drops 40 % from baseline

Monitor urine output, hematocrit, electrolytes, PT, PTT


Child with Fever and Abdominal pain

9 year old boy developed fever for one week associated with abdominal pain and diarrhea. Travelled to Pakistan 4 weeks earlier. PE findings pertinent for soft and generalized tenderness of his abdomen. CBC normal. Blood culture + for gram negative bacilli.
Diagnosis

1. Malaria
2. Shigellosis
3. Typhoid fever
4. Pneumonia

Child with Fever & Abdominal Pain

Fever and abdominal pain resolved after treatment with 2 week course of IV Ceftriaxone. A week after being off antibiotics he developed nasal congestion, sore throat and fever. Nasal congestion resolved after days but fever persisted.

Diagnosis

1. Pneumonia
2. Viral illness
3. Relapse of typhoid
4. Streptococcal pharyngitis

Distribution of typhoid fever
Manifestations of Typhoid Fever

9 year old boy developed fever for one week associated with abdominal pain and diarrhea. Travelled to Pakistan 4 weeks earlier. PE findings pertinent for soft and generalized tenderness of his abdomen. CBC normal. Blood culture + for gram negative bacilli.

Diagnostic test

- Stool culture
- Rectal swab culture
- Blood culture

Treatment

- Ampicillin
- TMP-SMZ
- 3rd generation cephalosporin
- Ciprofloxacin
- Azithromycin- for multiresistant strains

Child with Fever and Bloody Diarrhea

5 year old girl presented to ER because of bloody diarrhea for 3 days associated with fever. Recently arrive to the US from Malaysia. PE pertinent for abdominal tenderness and joint tenderness. No joint swelling was noted. Labs WBC 24,000 shift to the left. Electrolytes were normal.
Diagnosis

1. C. difficile colitis
2. Campylobacter colitis
3. Shigellosis
4. Y. enterocolitica colitis

Distribution of Shigellosis

5 year old girl presented to ER because of bloody diarrhea for 3 days associated with fever and abdominal pain. Recently arrive to the US from Malaysia. PE pertinent for abdominal tenderness and joint tenderness. No joint swelling was noted. Labs: WBC 24,000 Shift to the left. Electrolytes were normal.

Complication of Shigella

A child with shigellosis developed obtundation, intractable seizures, nuchal rigidity. Electrolytes are normal. Edema on CT of the brain.
Diagnosis
1. Secondary sepsis
2. Hyponatremia
3. Hypocalcemia
4. Ekiri syndrome

Diagnostic tests
- Stool culture
- Fecal leucocytes
- CBC

Treatment
- Antibiotics
- Supportive treatment

Preventive Measures
- CDC travel website - diseases related to travel or CDC Yellow Book
- Boil it, cook it, peel it, or forget it.
- Malaria prophylaxis.
- Use mosquito repellants.
Conclusion

Clinicians should have high index of suspicion for mosquito borne and infectious diarrheal illness in children with history of travel overseas.

Early recognition of these diseases is very important to reduce morbidity and mortality.

Consult appropriate resources available such as CDC. www.cdc.gov

Review Questions

A 4 year old boy from Abingdon, Virginia developed fever & bloody diarrhea for 2 days, associated with tenesmus. PE pertinent for abdominal tenderness & nuchal rigidity. En route to our hospital he developed intractable seizures. Electrolytes were normal. Has a history of travelling to India to visit a family. You should suspect?

Diagnosis

1. Malaria
2. Viral gastroenteritis
3. Meningitis
4. Shigellosis

Review Question

A five year old boy with history of frequent travel to Jamaica presented to you obtunded with epistaxis & hematemesis. BP 80/40. Multiple mosquito bites on the skin which he got after recent travel to Jamaica. Mom gave history of recent recovery from viral illness that was described by their physician as viral exanthem. Platelet count 20,000. You should suspect?
Diagnosis

1. Typhoid fever
2. Shigellosis
3. Meningitis
4. Dengue

References

1. CDC 2010 Health Information for International Travel
2. World Health Organization Website

Pintados Festival in Tacloban City, Philippines

Thank You