

20 – GI Infections: Part II

Speaker: James Platts-Mills, MD



GI Infections Part 2

James A. Platts-Mills, MD
Associate Professor of Medicine
Division of Infectious Diseases and International Health
University of Virginia

7/1/2024



• Disclosures of Financial Relationships with Relevant Commercial Interests

- None

Q8. A 43-year-old woman presents with several days of watery diarrhea and one day of gross blood in her stools. Two other members of her family have similar symptoms. None of the family members have had a fever and she is afebrile on exam. Laboratory studies are notable for a hematocrit of 28%, platelets of 80,000 per ml and creatinine 2.4 mg/dl.

In addition to stool-based diagnostics, which of the following would be the most appropriate next step in management for this patient?

- A) Start IV Ceftriaxone
- B) Withhold antibiotic therapy
- C) Start PO Azithromycin
- D) Start IV Meropenem
- E) Start PO Vancomycin

Antibiotics for suspected and confirmed STEC

Best evidence: meta-analysis of 17 studies with 1896 patients – pooled OR for HUS with antibiotic use was 1.33 (.89-1.99) in all studies, and in those with a "low-risk of bias" + appropriate definition of HUS, OR 2.24 (1.45-3.46) (Freedman et al, CID 2016)

Relevant IDSA guideline recommendations:

- 1) Empiric treatment of bloody diarrhea in immunocompetent patients should be limited to a) infants < 3 months of age with suspicion of bacterial etiology; b) fever + abdominal pain + blood + scant stools/tenesmus with suspicion for *Shigella*; c) recent international travel + high fever or sepsis;
- 2) Antimicrobial therapy for people with infections attributed to STEC O157 and other STEC that produce Shiga toxin 2 (or if the toxin genotype is unknown) **should be avoided** (strong, moderate); infections attributed to other STEC that do not produce Shiga toxin 2 (generally non-O157 STEC) is **debatable** due to insufficient evidence of benefit.

Q9. A 21-year-old male was admitted to the hospital with fever and abdominal pain. The abdominal pain, which developed over the course of 48 hours, was initially generalized and then localized to the right lower quadrant. He was febrile and had abdominal guarding. His white blood cell count was elevated. Abdominal ultrasound revealed a normal appendix and multiple enlarged mesenteric lymph nodes.

Which of the following exposures was most likely to be the cause of his illness?

- A) Consumption of undercooked chicken
- B) Recent purchase of a pet lizard
- C) Consumption of shellfish
- D) Consumption of undercooked pork
- E) Consumption of unwashed raspberries

Some source/pathogen associations you should know!

Source	Pathogen
Water	<i>Cryptosporidium</i> / <i>Giardia</i>
Custard	<i>Staph aureus</i> toxin
Hamburger	Shiga toxin-producing <i>E. coli</i> (STEC)
Leftover meat that is improperly stored after cooking and not sufficiently reheated	<i>Clostridium perfringens</i> toxin
Undercooked chicken/Handling eggs	<i>Campylobacter</i> / <i>Salmonella</i>
Produce (esp. raspberries)	<i>Cyclospora</i>
Seafood	<i>Vibrio</i>
Shellfish	<i>Vibrio</i> /norovirus
Undercooked pork/pork intestines	<i>Yersinia</i>
Turtles/Lizards/Frogs	<i>Salmonella</i>
Unpasteurized milk/soft cheese/deli meats	<i>Listeria</i>

20 – GI Infections: Part II

Speaker: James Platts-Mills, MD

Q10. An 81-year-old female was admitted to the hospital with vomiting, diarrhea, fever, and headache. She initially developed vomiting, diarrhea, and fever one week prior to presentation. The gastrointestinal symptoms resolved over the course of three days, but the fever continued and was accompanied by a progressive headache and dizziness. Her neurologic exam was notable for ataxia. A stool GI PCR panel was negative. An MRI revealed hyperintense lesions in the cerebellum on T2-weighted imaging. CSF analysis revealed a mild pleocytosis, mildly elevated protein, normal glucose, and a negative Gram stain. CSF and blood cultures are pending.

What type of organism is most likely to be isolated from CSF and/or blood cultures?

- A) A Gram positive coccus
- B) A Gram negative coccobacillus
- C) A Gram positive bacillus
- D) A Gram negative bacillus
- E) A Gram negative coccus

Q11. A 75 year-old-male with a history of atherosclerosis presents with persistent fever. Two weeks prior to presentation, he developed watery diarrhea and fever. The diarrhea resolved but the fever persisted and was accompanied by chills, night sweats, and a headache. He denied bone or joint pain. No murmur was present on exam. Multiple sets of blood cultures yielded *Salmonella typhimurium*. Antibiotic therapy was initiated, and repeat blood cultures after 48 hours remained positive.

What is the next best diagnostic test?

- A) Stool GI PCR panel
- B) Lumbar puncture
- C) CTA Chest
- D) MRI Brain
- E) Bone marrow biopsy

Major GI Syndromes

Diarrhea + systemic symptoms (fever, chills, headache, sepsis): Invasive *Salmonella*, *Listeria*, *Campylobacter*, *Yersinia*

“Food poisoning”: vomiting>diarrhea, starts < 24 hours from exposure, short duration, causes are *Staph aureus* toxin, *B. cereus* toxin, *Clostridium perfringens*

Acute watery diarrhea/vomiting: > 24 hours after exposure, ~72 hours duration but variable, favors viral etiology but differential remains broad esp. *Salmonella*, *Campylobacter*

Colitis: Often a progression from watery diarrhea, but volume decreases, frequency increases, abdominal pain and cramping, tenesmus, mucus/pus/blood in otherwise scant stools, causes are *Campylobacter*, *Shigella*, *E. histolytica*

Dysentery/Bloody diarrhea: *Campylobacter/**Shigella* (Fever common), Shiga toxin-producing *E. coli* (including EHEC)(Fever uncommon), *E. histolytica* (fever uncommon for luminal disease)

Persistent diarrhea (>14 days): *Cryptosporidium*, *Giardia*, broader differential in immunocompromised patients (including norovirus), but generally pre-test probability of infection is lower (and consider post-infectious IBS)

Q12. An outbreak of illness was reported among approximately 50 persons eating at an area restaurant. The illness consisted of nausea (97%), vomiting (97%), abdominal cramps (86%), chills (78%), muscle aches (67%), fever (64%), headache (61%) and watery diarrhea (58%). The median incubation period was 31.3 hours, one person was hospitalized and 10 sought medical care. The illness lasted approximately 48-72 hours.

What is the most likely cause of the outbreak?

- A) Norovirus
- B) Shiga toxin-producing *E. coli* 0157:H7 (STEC)
- C) *Campylobacter*
- D) Enterotoxigenic *E. coli* (ETEC)
- E) Pre-formed *Staphylococcus aureus* enterotoxin

GI Pathogens on the ABIM list

Bacteria

Listeria
Aeromonas
Salmonella
Shigella
Campylobacter
Vibrio
Yersinia

Protozoa (covered elsewhere)

Cryptosporidium hominis/parvum
Cyclospora cayentanensis
Cystoisospora belli
Entamoeba histolytica
Giardia
Dientamoeba fragilis
Balantidium coli

Viruses

Rotavirus
Norovirus
Sapovirus
Adenovirus

Fungi/Chromists

Blastocystis hominis
Microsporidia (e.g. *E. bienersi*, *E. intestinalis*)

Pathogen-specific therapy

Shigella (moderate/severe) – ciprofloxacin/azithromycin; ceftriaxone if hospitalized

C. jejuni (high fever, dysentery, bacteremia, immunocompromised) – azithromycin/ciprofloxacin; consider meropenem if severe/immunocompromised

Non-typhoidal Salmonella (severe, >50yrs, valve disease, severe atherosclerosis, AIDS) – ciprofloxacin/ceftriaxone

Salmonella Typhi/Paratyphi – ceftriaxone (severe) or ciprofloxacin/azithromycin (non-severe); if travel to Pakistan/Iraq; meropenem

Yersinia enterocolitica – TMP-SMX/ciprofloxacin or ceftriaxone+gentamicin (severe)

STEC – AVOID antibiotics

Vibrio cholerae – doxycycline; **Non-cholera Vibrio diarrhea** – doxycycline/azithromycin/ciprofloxacin

Listeria – ampicillin/penicillin (in combination with gentamicin for invasive infection)

Giardia – tinidazole/metronidazole

Cryptosporidium (HIV/AIDS) – nitazoxanide

Intestinal amoebiasis – metronidazole (systemic) + diloxanide furoate OR paromomycin (intraluminal)

Cyclospora/Isospora – TMP-SMX

20 – GI Infections: Part II

Speaker: James Platts-Mills, MD

Pathogen-specific therapy

Shigella (moderate/severe) – ciprofloxacin/azithromycin; **ceftriaxone if hospitalized**
C. jejuni (high fever, dysentery, bacteremia, immunocompromised) – azithromycin/ciprofloxacin; **consider meropenem if severe/immunocompromised**
Non-typhoidal Salmonella (severe, >50yrs, valve disease, severe atherosclerosis, AIDS) – ciprofloxacin/ceftriaxone
Salmonella Typhi/Paratyphi – **ceftriaxone (severe)** or ciprofloxacin/azithromycin (non-severe); **if travel to Pakistan/Iraq: meropenem**
Yersinia enterocolitica – TMP-SMX/ciprofloxacin or **ceftriaxone+gentamicin (severe)**
STEC – AVOID antibiotics
Vibrio cholerae – doxycycline; **Non-cholera Vibrio diarrhea** – doxycycline/azithromycin/ciprofloxacin
Listeria – ampicillin/penicillin (in combination with gentamicin for invasive infection)
Giardia – tinidazole/metronidazole
Cryptosporidium (HIV/AIDS) – nitazoxanide
Intestinal amoebiasis – metronidazole (systemic) + diloxanide furoate OR paromomycin (intraluminal)
Cyclospora/Isospora – TMP-SMX

Thank you!