

16 – Gastrointestinal Disease: Clinical Syndromes

Speaker: Herbert DuPont, MD

IDBR
**INFECTIOUS
DISEASE
BOARD REVIEW**
**AUGUST 20-24
2022**

Gastrointestinal Disease: Clinical Syndromes

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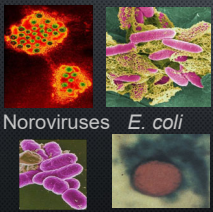
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Disclosures of Financial Relationships with Relevant Commercial Interests

- None

OBJECTIVES




Noroviruses *E. coli*
Shigella *Cyclospora*

- DESCRIBE CLINICAL CHARACTERISTICS OF VARIOUS FORMS OF ENTERIC INFECTION SYNDROMES AND SEAFOOD-ASSOCIATED ILLNESSES
- OUTLINE METHODS EMPLOYED IN FOODBORNE OUTBREAK INVESTIGATION
- DEFINE THE CURRENT STATUS OF THERAPY OF DYSENTERIC TRAVELERS' DIARRHEA
- EXPLAIN THE IMPORTANT POST-DIARRHEA CHRONIC COMPLICATIONS
- EXPLAIN PRINCIPLES OF WORKUP OF PERSISTENT DIARRHEA

EVALUATION OF CASES OF DIARRHEA
KEYS CLINICAL FEATURES SPECIAL SETTINGS

VOMITING AS THE PRIMARY SYMPTOM

- VIRAL GASTROENTERITIS WITH INCUBATION PERIOD: **24 – 48 HOURS**
- FOOD POISONING PERFORMED TOXIN* OF *STAPHYLOCOCCUS AUREUS* OR *BACILLUS CEREUS* WITH INCUBATION PERIOD: **2-7 HOURS**



Clostridium perfringens* food Poisoning preformed toxin causes watery diarrhea without vomiting, incubation period of **8-14 hours

INDIVIDUAL CASES KEYS TO ESTABLISH CAUSE

CLINICAL FEATURES
SETTING (EPIDEMIOLOGY)
LABORATORY TESTING


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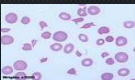
INFECTION DISEASE 2022 PREVIEW QUESTION

83-YEAR-OLD MAN WITH BLOODY DIARRHEA DEVELOPS RENAL FAILURE

- HE HAS A ONE WEEK HISTORY OF DIARRHEA WITH STOOLS CONTAINING BLOOD; HE UNDERGOES COLONOSCOPY WHICH LOOKS LIKE ISCHEMIC COLITIS
- AS HIS DIARRHEA IMPROVES HIS URINE OUTPUT DECREASES
- SERUM CREATININE IS 9, PLATELET COUNT OF 50,000, HEMATOCRIT 20 AND LDH 1,000.
- STOOL CULTURE ON SORBITOL MACCONKEY AGAR GROWS ONLY SORBITOL-FERMENTING *E. COLI* AND STOOL SAMPLE IS POSITIVE FOR SHIGA TOXIN 2 BY EIA
- HE IS TREATED WITH HEMODIALYSIS



Colonoscopy Shows "Ischemic Colitis"




Peripheral Smear Shows Red Cell Fragments


QUESTION #1 **INFECTION DISEASE 2022 PREVIEW QUESTION**

WHAT IS THE LIKELY CAUSE OF DYSENTERY AND RENAL FAILURE IN THE ELDERLY MAN?

- ISCHEMIC BOWEL DISEASE
- NON-O157 SHIGATOXIN PRODUCING *E. COLI* (STEC)
- O157:H7 STRAIN OF STEC
- SHIGELLA DYSENTERIAE 1 (SHIGA BACILLUS)
- CAMPYLOBACTER JEJUNI



QUESTION #2 **INFECTION DISEASE 2022 PREVIEW QUESTION**




A PATIENT DEVELOPS NUMBNESS OF LIPS, BURNING AND TINGLING OF HIS EXTREMITIES, AND ABDOMINAL PAIN AND VOMITING 30 MINUTES AFTER A MEAL IN JAMAICA, PROGRESSING TO RESPIRATORY FAILURE.

WHAT IS THE LIKELY DIAGNOSIS?

- SCOMBROID
- PARALYTIC SHELLFISH POISONING
- CIGUATERA
- NEUROTOXIC SHELLFISH POISONING
- MONOSODIUM GLUTAMATE TOXICITY

QUESTION 3





A 65-YEAR OLD CHAIRMAN OF MEDICINE AT A MEDICAL SCHOOL WITH 15 DAYS OF DIARRHEA, PASSING 4-8 WATERY STOOLS PER DAY WITHOUT FEVER OR PASSAGE OF BLOODY STOOLS. HE HAS NOT TRAVELED AND HAD AN INITIAL WORKUP FOR DIARRHEA: STANDARD STOOL CULTURE AND AN ORDER FOR PARASITES THAT INCLUDES A SCREEN FOR *GIARDIA*, *CRYPTOSPORIDIUM* AND *ENTAMOEB*.

WHICH OF THE FOLLOWING IS THE BEST NEXT APPROACH?


- COLLECT 3 STOOLS FOR PARASITES BY EIA
- COLLECT 3 STOOLS FOR PARASITES BY PCR
- PERFORM MULTIPLEX PCR FOR ENTERIC VIRAL, BACTERIAL AND PARASITIC PATHOGENS
- ASK THE LABORATORY TO PERFORM ACID-FAST STAINING OF STOOL FOR PARASITES
- GIVE THE PATIENT 1,000 MG AZITHROMYCIN IN SINGLE DOSE

COMPLICATED CASE OF TRAVELERS' DIARRHEA

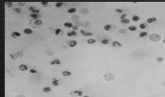



A 35-YEAR OLD WOMAN DEVELOPS DIARRHEA, CRAMPS AND IS PASSING BLOODY STOOLS WITH FEVER WHILE SNORKELING WITH HER FAMILY IN COZUMEL, MEXICO

QUESTION 4



Grassy bloody stool



Many leukocytes of stool microscopically indicate diffuse colonic inflammation

What is the preferred treatment for this patient With dysenteric traveler's diarrhea?

- AZITHROMYCIN 1,000 MG
- CIPROFLOXACIN 500 MG TWICE DAILY X 3 DAYS
- LEVOFLOXACIN 500 MG
- RIFAXIMIN 200 MG THREE TIMES/D FOR 3 DAYS
- ORAL FLUIDS ONLY

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QUESTION 5

She takes three days of ciprofloxacin, a drug she has with her for recurrent urinary tract infection.

Which of the following concerns you the most about this treatment?



- A. COLONIZATION BY ESBL-PRODUCING COLIFORMS
- B. ACHILLES TENDON DAMAGE
- C. C. DIFFICILE INFECTION
- D. INSOMNIA AND IRRITABILITY
- E. SHE WILL RUN OUT OF DRUGS FOR FUTURE UTI

POST-ENTERIC INFECTION DISORDER

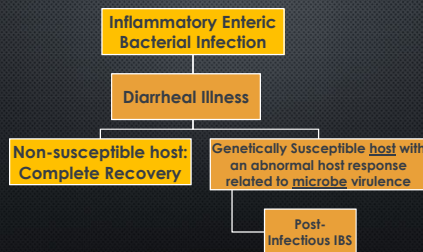
THE PATIENT EXPERIENCES A PROTRACTED COURSE



ABDOMINAL DISCOMFORT AND PAIN & BLOATING ARE NEAR CONSTANT PROBLEMS PRESENT 6 MONTHS LATER — SHE HAS NEVER BECOME WELL, ALTHOUGH THE ILLNESS HAS CHANGED IN CHARACTER FROM DIARRHEA TO ABDOMINAL DISCOMFORT WITH CHANGE IN BOWEL PATTERN (EATING INCREASES PAIN AND DECREASES STOOL FORM)

POST-INFECTIOUS IRRITABLE BOWEL SYNDROME 5-10% AFTER BACTERIAL DIARRHEA

PATHOGENESIS OF POST-INFECTIOUS IBS



POST-ENTERIC INFECTION DISORDER 2

QUESTION 6

Which one of the following represents an antibody-mediated post-enteric autoimmune complication?

- A. CROHN'S DISEASE
- B. FUNCTIONAL CONSTIPATION
- C. REACTIVE ARTHRITIS
- D. CELIAC DISEASE
- E. WHIPPLE'S DISEASE

Post-Enteric Infection Disorder 2

- REACTIVE ARTHRITIS AFTER INFECTION BY SALMONELLA, SHIGELLA OR YERSINIA DUE TO AUTOIMMUNE RESPONSES TARGETING EPITOPES COMMON TO PATHOGEN AND JOINT TISSUES



QUESTION 7

WHAT IS ANOTHER ANTIBODY-MEDIATED POST-ENTERIC INFECTION SYNDROME?

- A. ASEPTIC MENINGITIS
- B. GUILLAIN BARRE SYNDROME
- C. POST-INFECTIOUS IBS
- D. POST-INFECTIOUS INFLAMMATORY BOWEL DISEASE
- E. DIVERTICULITIS

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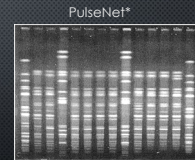
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OUTBREAK INVESTIGATIONS

KEYS
EPIDEMIC CURVE
CLINICAL FEATURES
INCUBATION PERIOD
CASE-CONTROL STUDIES OF CAUSE

AN EPIDEMIC OF SHIGA-TOXIN (STX) PRODUCING *E. COLI* (STEC) O157:H7

- ON MAY 19, 2009, THE PULSENET NATIONAL MOLECULAR SUBTYPING NETWORK IDENTIFIED A CLUSTER OF 77 CASES OF *E. COLI* INFECTION FROM 30 STATES WITH IDENTICAL PFGE PATTERN
- CASES OCCURRED BETWEEN MARCH 1 AND JULY 31, 2009
- THE MEDIAN AGE WAS 15 YEARS, 71% WERE FEMALES
- 55% WERE HOSPITALIZED, 18% DEVELOPED HUS AND NONE DIED



- Developed in 1996, two enzymes cut bacterial DNA with an electrical
 - Current moves DNA according to size showing unique banding patterns
- PFGE being combined with WGS

CASE CONTROL STUDY PERFORMED TO IDENTIFY THE SOURCE

STEP 2: OUTBREAK INVESTIGATION

- CONTROLS WERE FOUND FROM CORRESPONDING HEALTH DEPARTMENTS WITH NON-STEC ENTERIC INFECTION
- CONVENTIONAL STEC RISK FACTORS* WERE NOT FOUND

*Ground beef, raw dairy products, leafy green vegetables, wading pools and animal contact

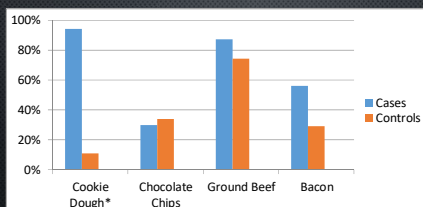
A CASE CONTROL STUDY WAS PERFORMED TO IDENTIFY THE SOURCE

STEP 2: OUTBREAK INVESTIGATION

- OPENED QUESTIONS IN ONE HEALTH REGION FOUND 5/5 ATE READY-TO-BAKE COOKIE DOUGH

A CASE CONTROL STUDY WAS PERFORMED TO IDENTIFY THE SOURCE

STEP 2: OUTBREAK INVESTIGATION



53% of college student reported eating unbaked homemade cookie dough. Byrd-Bredbenner C et al. J Am Diet Assoc 2008;108:549-52

CONCLUSIONS

- THE CLINICAL FEATURES AND INCUBATION PERIOD PROVIDE CLUES TO THE CAUSE OF ILLNESS
- KNOW HOW TO DIAGNOSE STEC INFECTION (O157 & NON-O157)
- MOLECULAR CHARACTERIZATION (PULSENET), THE EPIDEMIC CURVE AND CASE CONTROL STUDY ARE KEYS TO FOODBORNE OUTBREAK INVESTIGATION
- CONSIDER PLWBS IN PERSONS WITH PERSISTENT ABDOMINAL PAIN AFTER DIARRHEA BOUTS
- LEARN SEAFOOD SYNDROMES
- MULTIPLEX PCR WILL HELP DEFINE THE CAUSES OF DIARRHEA AND IS MOST VALUABLE IN WORKUP OF PERSISTENT DIARRHEA

