Cyclospora cayetanensis 2013 Outbreaks

Brief Review

Cyclospora cayentanensis

- ž Coccidian protozoan
- ž Not immediately infective
- z Low infective dose
- z Very resistant to standard disinfection
- z "Stickier" than other protozoa

Epidemiology

- z Humans are only known host for C. cayetanensis
- z Transmission not direct, but in food and water
- z Associated with travel to endemic countries or consumption of imported produce
- ž Seasonal pattern matches growing season of soft fruit and leafy vegetables
- Z Age distribution is left-shifted in developing world, but bell shaped in developed countries



Symptoms, Diagnosis, Treatment, and Prevention

- ž Typical symptoms of small bowel disease
- ž Test fecal specimen for presence of oocysts
- ž Therapy of choice is TMP-SMX
- Z Prevention: avoid food and water that may be contaminated with the organism

Laboratory

Laboratory Diagnosis

ž Wet mount ID confirmed by:

o Ultraviolet fluorescence

Modified acid-fast stain

z Molecular techniques

Microscopic Appearance



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Wet Mount



UV Fluorescence



Acid Fast



Acid Fast

Handling for Testing

- Z Refrigerate unpreserved stool and test, or fix, as soon as possible
- ž Fix in 10% formalin for microscopic exam
- ž Fix in 2.5% potassium dichromate (or PVA) or freeze without fixation for molecular testing

Texas DSHS Lab Support

- ž Provide primary and confirmation testing for state and regional health department investigations
- z Provide confirmation testing for preliminary results at private labs
- z Coordinate with CDC, Texas private reference labs, and Texas health department epidemiologists
- z Provide materials to CDC for molecular research

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Future Lab Trends

CDC and other institutions are working to develop advanced molecular detection methods for Cyclospora cayetanensis that could distinguish among strains. DNA fingerprinting methods could help public health investigators determine whether cases are linked to each other and to food sources

2013 Outbreak



- ž 43 lab confirmed cases in 2012, triple the number in the previous year
- Z Small disease cluster associated with a San Antonio restaurant
- z Cabbage, cilantro, lettuce, poblanos, and tomatoes were suspected as a vehicle

2013 National Outbreak

- ž A total of 631 confirmed cases in 25 states
- ž Onsets from June to August 2013
- ž Patients ranged < 1 year to 94 years-old
- z 58% of patients were female
- z 49 hospitalizations; no deaths



2013 Texas Cases

- ž A total of 314 cases in 45 counties
- ž Onsets from June to August 2013
- ž Patients ranged < 1 year to 92 years-old
- ž 57% of patients were female
- z 21 hospitalizations; no deaths

Case Count Map





Epi Curve







Results Indicate 2 Outbreaks

Z lowa and Nebraska cases were linked to a salad mix produced by Taylor Farms de Mexico in Guanajuato

ž Texas cases were linked to cilantro from Puebla, Mexico

lowa & Nebraska Outbreak

- č Case-control analysis linked outbreak to restaurant salad containing lettuce, cabbage, and carrots
- z Salads were traced back to a common supplier, Taylor Farms de Mexico
- z Taylor Farms voluntarily suspended production pending investigation
- Taylor Farms will implement sampling of their product and water and monitor sanitary conditions
- z FDA increased its surveillance efforts on green leafy products exported to the U.S. from Mexico

Texas Outbreak

- Z Case-control analysis linked disease clusters at 3 restaurants and 1 grocery store to fresh cilantro
- Four fresh produce items were significantly associated: cilantro, onions, garlic, and tomatoes; only cilantro was consumed by all ill persons in the cluster investigation
- Traceback information indicated that the cilantro consumed was harvested from the Puebla, Mexico area; FDA is requesting farm level information
- FDA has increased its surveillance efforts on cilantro products exported to the U.S. from Mexico



Timeline of Events: Cyclosporiasis Outbreak Investigations—United States, 2013



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For more information, visit CDC's Parasitic Diseases website: https://www.cdc.gov/parasites/cyclosporiasis



"Consumers should continue to enjoy the health benefits of eating fresh fruits and vegetables as part of a well-balanced diet."

CDC



Thank you!

Vanessa Cantu with the Texas DSHS Emerging and Acute Infectious Disease Branch

CDC Division of Parasitic Disease and Malaria Lab

Katherine von Alt at CPL and Janice Petersen at Quest Diagnostics laboratories

My co-workers with the DSHS Lab Parasitology Team

References

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Contact

Cathy Snider, MPH, MT (ASCP) Medical Parasitology Team Lead 1100 W. 49th Street P.O. Box 149347 Austin, TX 78756 512-776-7560 512-776-7452 fax

