Short Communication

Available online at www.JGTPS.com

ISSN: 2230-7346
Journal of Global Trends in Pharmaceutical Sciences
Volume 5, Issue 1, pp -1405-1409, January-March 2014

ANTIBIOTICS IN TRAVELERS DIARRHOEA

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Journal of Global Trends in Pharmaceutical Sciences

ABSTRACT

Travellers' diarrhea is the most common illness experienced by travellers and with an incidence estimated from 20% to over 80%. The occurrence of three or more unformed stools within a 24 hour period or any number of such unformed stools when accompanied by either nausea, vomiting, abdominal cramps, tenesmus (involuntary straining with little or no passage of fecal matter), or fever. Approximately 20 million episodes of diarrhea occur annually in people traveling from industrialized regions to budding countries. Diarrheogenic Escherichia coli, including enterotoxigenic E. coli and enteroaggregative E. coli, are responsible for ~50% of cases. The invasive bacterial pathogens are Shigella, Salmonella, invasive E. coli, and Campylobacter jejuni cause ~10–25% of cases, with the highest frequencies in southern Asia. A study revealed that 46 percent acquired diarrhea conditions are found in developing countries. Traveler's diarrhea is more common in young children and has a privileged risk of dehydration and serious sickness. The drug of choice for most children with traveler's diarrhea is Azithromycin. The main complication of traveler's diarrhea is Dehydration. Bismuth Subsalicylate two tablets QID, which partly protective against travelers' diarrhea. Treatment with antibiotics is a better alternative. Antibiotic treatment varies depending on the cause of the acute diarrhea. Enhanced defensive and prophylactic measures will be needed until newer antibiotics become available and the sanitation and hygiene in developing countries improve.

Keywords: Antibiotics, diarrhea, prophylaxis, traveler's diarrhea

INTRODUCTION

Travellers' diarrhea is the most common illness experienced by travellers from industrialized countries journeying to third humanity countries. Although it is more often than not a self-limiting sickness, and even so mess up three to four days of a holiday or require alteration of holiday plans. Travellers' diarrhea is strikingly common, with an incidence estimated from 20% to over 80%. The occurrence of three or more unformed stools within a 24 hour period or any number of such unformed stools when accompanied by either nausea, vomiting, abdominal cramps, tenesmus (involuntary straining with little or no passage of fecal matter), or fever. [1]

Approximately 20 million episodes of diarrhea occur annually in people traveling from industrialized regions to budding countries. Civilization can be separated into three regions depending upon the risk of acquiring travelers' diarrhea for visitors from industrialized and low-risk regions. Diarrheogenic Escherichia coli include enterotoxigenic E. coli and enter aggregative E. coli, are responsible for ~50% of cases. The invasive bacterial pathogens are Shigella, Salmonella, invasive E. coli, and Campylobacter jejuni cause ~10–25% of cases, with the highest frequencies in southern Asia. [2-4]In coastal areas of the world, noncholera Virgo species cause a small proportion of diarrhea. [5-7]

Most cases occur within the first two weeks of travel and last about four days without treatment. Although traveler's diarrhea rarely is serious and its outcome are momentous morbidity; one in five travelers with diarrhea is

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bedridden for a day and more than one third have to alter their actions. [8, 9] A study revealed that 46 percent acquired diarrhea conditions are found in budding countries. [10]

Destination is the most significant risk factor for developing traveler's diarrhea. [11 - 14] Regions with the highest risks are seen in urbanized countries. Those who are travelers having Immunocompromised as well as lowered gastric acidity are more prone to traveler's diarrhea. Newly, a genetic defenselessness has been demonstrated. [15]Younger age and adventurous travel increase the risk of developing traveler's diarrhea, [16, 17] but persons staying at luxury resorts or on cruise ships also are at risk. [18]

Food and water contaminated with fecal matter are the main reservoirs for the pathogens that cause traveler's diarrhea. Hazardous beverages and foods include unpeeled fruits, salads, inadequately cooked meats and seafood, and tap water, unpasteurized dairy products. Intake of foods and any other beverages in restaurants increases the possibility of contracting traveler's diarrhea and food from street vendors is particularly risky. [19, 20]Cold sauces, salsas, and foods that are cooked and then reheated also are risky. [21]

Common Causes of Traveler's Diarrhea [22]

The common causes of traveler's diarrhea were displayed in table 1. In Mexico, Enterotoxigenic E. coli and enteroaggregative E. coli may be accountable for up to 71 percent of cases of traveler's diarrhea. [23] In contrast, Campylobacter is a leading cause of traveler's diarrhea in Thailand [24 - 26] and also common in Nepal. [27] Cyclospora is endemic in Nepal, Peru, and Haiti. Food poisoning is part of the differential diagnosis of traveler's diarrhea. Gastroenteritis from preformed toxins (e.g., Staphylococcus aureus, Bacillus cereus) is characterized by a short incubation period and symptoms characteristically subside within one day. [28]

Traveler's Diarrhea in diverse age groups:

Traveler's diarrhea is more common in young children and has a privileged risk of dehydration and serious ill health. [29] Children show signs of moderate to bloody diarrhea, severe dehydration, hyperthermia (102°F), or persistent vomiting. Few data exist on the treatment of diarrhea in children. Nursing infants should continue to breastfeed on exact. The infants and grown-up children should be offered their usual food. [30] Azithromycin is the drug of choice for most children with traveler's diarrhea. Another option is nalidixic acid in a dosage of 55 mg per kg per day divided into four doses, not to exceed 1 g in 24 hours. [31] Loperamide is approved for children less than two years, but in dysentery condition it should not be used. For prophylaxis in children, bismuth subsalicylate should be avoided because of the possible risk of Reye's syndrome. Pregnant women may be at higher risk of traveler's diarrhea than nonpregnant women because of lowered gastric acidity and increased gastrointestinal transit time. [32] Quinolones (FDA pregnancy category C) generally are not advised during pregnancy, but azithromycin (category B) is harmless. ORS should be initiated.

Complications

The main complication of traveler's diarrhea is Dehydration.

Other complications

It includes Guillain-Barré syndrome, Reiter's syndrome, Clostridium difficile colitis subsequent to antibiotic use, and post infectious irritable bowel. Parasitic causes should be suspected in travelers who return with prolonged diarrhea or who do not respond to these antibiotics. It is reasonable to confer empirical therapy of protozoal infections (e.g., metronidazole 250 mg three times a day for five days or tinidazole in a single 2-g dose for Giardiasis) that traveling to secluded areas for extensive periods. [33]

Treatment [34 - 36]

The treatment for traveler's diarrhea was displayed in table 2. The following foods that are generally considered high-risk:

1) Drinking untreated water (this includes brushing your teeth with it!)
2) Ice cubes in a drink (alcohol does NOT provide protection)
3) Chang (rice beer, usually made with untreated water)
4) Raw vegetables
5) Salad
6) Uncooked fish

7) Uncooked or rare-cooked meat
8) Unpeeled fruit
9) Fresh fruit juice
10) Cheese
11) Ice cream
12) Any kind of street vendor food

Prophylaxis

Bismuth Subsalicylate two tablets QID, which partly protective against travellers' diarrhea. Bismuth Subsalicylate is free from side effects but it may transiently cause color tongue and blackish stools, constipation.

Treatment Issues

Treatment with antibiotics is a better alternative. Antibiotic treatment varies depending on the cause of the diarrhea. [37]

CONCLUSION

Travellers' diarrhea is the most common illness experienced by travellers and with an incidence estimated from 20% to over 80%. Traveler's diarrhea is more common in young children and has a privileged risk of dehydration and serious ill health. Azithromycin is the drug of choice for most children with traveler's diarrhea. The main complication of traveler's diarrhea is Dehydration. Enhanced defensive and prophylactic measures will be needed until newer antibiotics become available and the sanitation and hygiene in developing countries improve.

Table 1: Common Causes of Traveler's Diarrhea

Bacteria	Parasites	Viruses
Enterotoxigenic: Escherichia coli Other E. coli types: • Campylobacter • Salmonella • Shigella • Aeromonas • Vibrio	Giardia lamblia Entamoeba histolytica Cyclospora cayetanensis Cryptosporidium parvum	Rotavirus Noroviruses

Table 2: Treatment for Traveler's Diarrhea

Antibiotic	Dosage	Comments
Ciprofloxacin	500 mg BD for 1 - 3 days	Other quinolones (e.g., ofloxacin, norfloxacin, and levofloxacin) are presumed to be effective as well.
Rifaximin	200 mg TID for 3 days	Not efficient in people with dysentery
Azithromycin	In adults: 500 mg daily for one to three days or 1,000 mg in a single dose32 In children: 10 mg per kg daily for three days37	Antibiotic is the main choice for children and pregnant women.

REFERENCES

1. Introduction to traveler's diarrhea. Available from URL: http://www.high-altitude-medicine.com/diarrhea.html
2. Kean BH, Waters SR The diarrhea of travelers. III. Drug prophylaxis in Mexico. N Engl J Med. 1959; 261: 71–74
3. Jiang ZD et al. (2002) Prevalence of enteric pathogens among international travelers with diarrhea acquired in Kenya (Mombasa), India (Goa), or Jamaica (Montego Bay). J Infect Dis 185: 497–502
4. Hoge CW et al. (1998) Trends in antibiotic resistance among diarrheal pathogens isolated in Thailand over 15 years. Clin Infect Dis 26: 341–345
5. Mattila L (1994) Clinical features and duration of traveler's diarrhea in relation to its etiology. Clin Infect Dis 19: 728–734
6. Haberberger RL Jr et al. (1991) Travelers' diarrhea among United States military personnel during joint American-Egyptian armed forces exercises in Cairo, Egypt. Mil Med 156: 27–30
7. Ericsson CD et al. (1987) Clinical presentation as a guide to therapy for travelers' diarrhea. Am J Med Sci 294: 91–96

8. von Sonnenburg F, Tornieporth N, Waiyaki P, Lowe B, Peruski LF Jr, DuPont HL, et al. Risk and aetiology of diarrhoea at various tourist destinations. Lancet. 2000;356:133–4.
9. Hill DR. Occurrence and self-treatment of diarrhea in a large cohort of Americans traveling to developing countries. Am J Trop Med Hyg. 2000; 62:585–9.
10. Hill DR. Occurrence and self-treatment of diarrhea in a large cohort of Americans traveling to developing countries. Am J Trop Med Hyg. 2000; 62:585–9.
11. von Sonnenburg F, Tornieporth N, Waiyaki P, Lowe B, Peruski LF Jr, DuPont HL, et al. Risk and aetiology of diarrhoea at various tourist destinations. Lancet. 2000; 356:133–4.
12. Castelli F, Pezzoli C, Tomasoni L. Epidemiology of travelers' diarrhea. J Travel Med. 2001; 8(suppl 2):S26–S30.
13. Hill DR. Occurrence and self-treatment of diarrhea in a large cohort of Americans traveling to developing countries. Am J Trop Med Hyg. 2000; 62:585–9.
14. Steffen R, Sack RB. Epidemiology. In: Ericsson CD, DuPont HL, Steffen R, eds. Travelers' diarrhea. Hamilton, Ont.: BC Decker, 2003:112–23.
15. Jiang ZD, Okhuysen PC, Guo DC, He R, King TM, DuPont HL, et al. Genetic susceptibility to enteroaggregative Escherichia coli diarrhea: polymorphism in the interleukin–8 promotor region. J Infect Dis. 2003;188:506–11.
16. Hoge CW, Shlim DR, Echeverria P, Rajah R, Herrmann JE, Cross JH. Epidemiology of diarrhea among expatriate residents living in a highly endemic environment JAMA. 1996;275:533–8.
17. Hardie RM, Wall PG, Gott P, Bardhan M, Bartlett LR. Infectious diarrhea in tourists staying in a resort hotel. Emerg Infect Dis. 1999; 5:168–71.
18. Daniels NA, Neimann J, Karpati A, Parashar UD, Greene KD, Wells JG, et al. Traveler's diarrhea at sea: three outbreaks of waterborne enterotoxigenic Escherichia coli on cruise ships. J Infect Dis. 2000;181:1491–5
19. Ansdell VE, Ericsson CD. Prevention and empiric treatment of traveler's diarrhea. Med Clin North Am. 1999;83:945–73vi
20. Mensah P, Yeboah-Manu D, Owusu-Darko K, Ablordey A. Street foods in Accra, Ghana: how safe are they? Bull World Health Organ. 2002; 80:546–54.
21. Adachi JA, Mathewson JJ, Jiang ZD, Ericsson CD, DuPont HL. Enteric pathogens in Mexican sauces of popular restaurants in Guadalajara, Mexico, and Houston, Texas. Ann Intern Med. 2002; 136:884–7.
22. Jiang ZD, Lowe B, Verenkar MP, Ashley D, Steffen R, Tornieporth N, et al. Prevalence of enteric pathogens among international travelers with diarrhea acquired in Kenya (Mombasa), India (Goa), or Jamaica (Montego Bay). J Infect Dis 2002; 185:497-502.
23. Adachi JA, Jiang ZD, Mathewson JJ, Verenkar MP, Thompson S, Martinez-Sandoval F, et al. Enteroaggregative Escherichia coli as a major etiologic agent in traveler's diarrhea in 3 regions of the world. Clin Infect Dis 2001; 32:1706-9.
24. Kuschner RA, Trofa AF, Thomas RJ, Hoge CW, Pitarangsi C, Amato S, et al. Use of azithromycin for the treatment of Campylobacter enteritis in travelers to Thailand, an area where ciprofloxacin resistance is prevalent. Clin Infect Dis 1995; 21:536-41.
25. Hoge CW, Gambel JM, Srijan A, Pitarangsi C, Echeverria P. Trends in antibiotic resistance among diarrheal pathogens isolated in Thailand over 15 years. Clin Infect Dis 1998; 26:341-5.
26. Sanders JW, Isenbarger DW, Walz SE, Pang LW, Scott DA, Tamminga C, et al. An observational clinic-based study of diarrheal illness in deployed United States military personnel in Thailand: presentation and outcome of Campylobacter infection. Am J Trop Med Hyg 2002; 67:533-8
27. Jiang ZD, Lowe B, Verenkar MP, Ashley D, Steffen R, Tornieporth N, et al. Prevalence of enteric pathogens among international travelers with diarrhea acquired in Kenya (Mombasa), India (Goa), or Jamaica (Montego Bay). J Infect Dis 2002; 185:497-502.

28. Tauxe RV, Swerdlow DL, Hughes JM. Foodborne disease. In: Mandell GL, Douglas RG, Bennett JE, Dolin R, eds. Mandell, Douglas, and Bennett's Principles and practice of infectious diseases. 5th ed. Philadelphia: Churchill Livingstone, 2000:1150-65.
29. Pitzinger B, Steffen R, Tschopp A. Incidence and clinical features of traveler's diarrhea in infants and children. Pediatr Infect Dis J 1991;10: 719-23.
30. Stauffer WM, Konop RJ, Kamat D. Traveling with infants and young children. Part III: travelers' diarrhea. J Travel Med 2002; 9:141-50.
31. Stauffer WM, Konop RJ, Kamat D. Traveling with infants and young children. Part III: travelers' diarrhea. J Travel Med 2002; 9:141-50.
32. Samuel BU, Barry M. The pregnant traveler. Infect Dis Clin North Am 1998; 12:325-54.
33. Drugs for parasitic infections. Med Lett Drugs Ther 2004;46:1-12.
34. Hoge CW, Gambel JM, Srijan A, Pitarangsi C, Echeverria P. Trends in antibiotic resistance among diarrheal pathogens isolated in Thailand over 15 years. Clin Infect Dis 1998;26:341-5.
35. Adachi JA, Ericsson CD, Jiang ZD, DuPont MW, Martinez-Sandoval F, Knirsch C, et al. Azithromycin found to be comparable to levofloxacin for the treatment of US travelers with acute diarrhea acquired in Mexico. Clin Infect Dis 2003; 37:1165-71.
36. Stauffer WM, Konop RJ, Kamat D. Traveling with infants and young children. Part III: travelers' diarrhea. J Travel Med 2002; 9:141-50.
37. Treatment issues. Available from URL: http://www.high-altitude-medicine.com/diarrhea.html