Texas Preventable Disease NEWS

Vol. 47, No. 19
May 16, 1987

contents:

Bureau of Epidemiology, 1100 West 49th Street, Austin, Texas 78756-3180 (512-458-7207)

INTERNATIONAL TRAVEL
PART II: TRAVELERS' DIARRHEA

Diarrhea is the most common health problem affecting travelers to developing countries. Travelers' diarrhea (TD) is a syndrome characterized by a twofold or greater increase in the frequency of unformed bowel movements. In addition to diarrhea, symptoms of TD include abdominal cramps, nausea, bloating, urgency, fever (low grade), and malaise. Onset of symptoms in TD is abrupt and may occur during travel or soon after return home; symptoms usually resolve without treatment in a week or less.

In January 1985, the National Institutes of Health convened a Consensus Development Conference on Travelers' Diarrhea. The Conference Statement is recommended reading for health professionals advising international travelers, and it forms the basis for recommendations made by the Bureau of Epidemiology.[1]

All international travelers are not at equal risk of acquiring TD. Travel destination(s); mode, style, and duration of travel; and dietary and hygenic practices of the traveler all influence the risk of acquiring TD. Developing nations in Latin America, Africa, the Middle East, and Asia are the destinations of highest risk. Generally, short-term travel by air with tourist accommodations is less likely to result in TD than is long-term travel at the level of the native economy. And finally, because TD is acquired through ingestion of fecally contaminated foods and drinks, what the traveler eats and how it is prepared remain the most important factors in the epidemiology of travelers' diarrhea.

ETIOLOGY OF TRAVELERS' DIARRHEA

TD is caused primarily by infectious, pathogenic agents. There are no data to support noninfectious causes of TD, such as changes in diet, jet lag, altitude, or fatigue. Individual cases range from being polymicrobial in origin to instances where no pathogenic organism is recovered to explain the symptoms. In some studies, 20% to 50% of cases have had no causative organisms identified.[1] These unidentified causes may be due to well-known pathogens that were not looked for in every study, unknown pathogens, or established pathogens that were not detected.

The most commonly identified causative agents of TD are the enterotoxigenic *Escherichia coli* bacteria. These bacteria adhere to the small intestine, multiply, and produce an enterotoxin that causes fluid secretion and diarrhea. Other enteric bacterial, viral, and parasitic pathogens play less frequent and less well established roles in the epidemiology of TD. Included among, but not limited to, these less common causes of TD are *Salmonella*, *Shigella*, *Campylobacter* and *Vibrio* sp. bacteria; rotavirus and Norwalk-like virus; and parasites such as *Giardia lamblia*, *Entamoeba histolytica*, and *Cryptosporidium* sp. Many other bacteria, viruses, and parasites have been identified in individuals with TD, though their causative role(s) in the illnesses may not be established.

PREVENTION OF TRAVELERS' DIARRHEA

The most successful methods of preventing TD are those which prevent exposure to the causative organisms. Travelers should be instructed in what is and is not safe to eat and what

circumstances or styles of preparation may affect the safety of their food. Among the highest risk foods are: raw salads, raw meats and seafood, tap water ice, unpasteurized dairy products, and unpeeled fruits and vegetables. However, in reality even the most fastidious travelers may encounter circumstances beyond their control. As with so many other health risks, prevention of TD cannot be guaranteed, but, by reducing the opportunities for exposure to the causative agents, travelers can minimize the risks of acquiring travelers' diarrhea.

Antiperistaltic and antimotility drugs are not effective in preventing TD and should not be used prophylactically for that purpose. In some cases these drugs may actually increase the risk of TD. A liquid suspension of bismuth subsalicylate decreased the incidence of diarrhea by 60% in one study. However, the large volumes required (240 ml per day) can contribute to untoward side effects. More recently, DuPont et al reported the effectiveness of two tablets of bismuth subsalicylate, four times daily (2.1 g/day), in reducing the occurrence of travelers' diarrhea among persons at risk for periods of up to three weeks.[2]

Entero-Vioform and related halogenated hydroxyquinoline derivatives are not effective in preventing TD and may produce serious neurologic side effects. Thus, they should **never** be used for prophylaxis of TD.

Two antibiotics, doxycycline and trimethoprim/sulfamethoxazole (TMP/SMX), have been shown in controlled studies to be effective in reducing the incidence of TD by 50% to 86%. Trimethoprim alone was effective in one study. However, the routine, widespread prophylactic use of antibiotics cannot be recommended. These and all other drugs may produce allergic and other adverse effects that limit their use by large numbers of people. Widespread and indiscriminate use of antibiotics will, in time, select out resistant strains of enteric pathogens. Also, because TD and other diarrheal illnesses are caused by a variety of different pathogens, only some of which will be susceptible to any given antibiotic, their prophylactic use could provide a false sense of security to the traveler.

The current recommendation for the prevention of travelers' diarrhea remains the education of travelers in regard to the symptoms of TD, how it is acquired, and the dietary practices necessary to reduce the likelihood of exposure to its causative agents.

TREATMENT OF TRAVELERS' DIARRHEA

The vast majority of cases of TD are self-limited and will resolve in less than one week without treatment. Many types of drugs have been recommended and used for the treatment of TD. However, few have any scientific basis for their recommendation. Many of the same drugs that are not generally recommended for preventing TD also should not be used to treat TD. These include large volumes and extended doses of bismuth subsalicylate, Entero-Vioform and related drugs, and the antimotility drugs.

Short-term use of selected antimotility drugs (diphenoxylate and loperamide) may be indicated when travel cannot be delayed due to TD. However, they should not be used by patients with either high fever or blood in the stool (which generally are not symptoms of TD). Their use should be discontinued if symptoms persist beyond 48 hours, and they should not be used in children under the age of two years.

In contrast to prophylaxis, selected antibiotics have been shown to be effective in the treatment of TD. A typical three- to five-day illness can be limited to one to two days with effective antibiotic treatment. Recommended drugs include TMP/SMX, 160 mg TMP and 800 mg SMX, or TMP alone, 200 mg, taken twice daily. Doxycycline, 100 mg twice daily, is also effective. Treatment is for three days or less. Antibiotics should not be used to treat nausea and/or vomiting without diarrhea.

Antibiotics to treat TD should be prescribed by the traveler's physician and obtained prior to travel. The physician is responsible for counseling the traveler in their appropriate use. Pregnant women and children present special cases, and their use of such medications must be considered carefully. Tetracyclines (including doxycycline) are generally contraindicated in

children under 8 years of age. Because trimethoprim and sulfamethoxazole may interfere with folic acid metabolism, their use during pregnancy is justified only if the potential benefit outweighs the risk to the fetus.

Fluid replacement to prevent dehydration is a mainstay in the treatment of travelers' diarrhea. Most cases of TD are not so severe that adults cannot maintain adequate fluid intake with fruit juices and caffeine-free soft drinks. Alcohol, caffeine-containing drinks, and dairy products should be avoided. Eating lightly will not contribute to the severity or duration of TD in most cases. Children, the elderly, and persons with underlying illnesses should be monitored closely for dehydration. In severe cases of dehydration, oral replacement (rehydration) solutions patterned after the World Health Organization's recommendations may be necessary.

Diarrhea is a major health problem for travelers to developing areas of the world. However, an understanding of the causes of TD and a common-sense approach in consuming foods and beverages, supported by the rational treatment of illness if it occurs, can lessen the risk of acquiring TD and shorten the duration of symptoms.

REFERENCES:

1. National Institutes of Health. Travelers' diarrhea. Consensus Development Conference Statement 1985; 5(8).

2. DuPont HL, Ericsson CD, Johnson PC, et al. Prevention of travelers' diarrhea by the tablet formulation of bismuth subsalicylate. JAMA 1987;257:1347-50.

* * *

MUMPS OUTBREAK IN CLEAR LAKE CITY - SEABROOK

On January 16 of this year, a mumps case was identified in a tenth-grade student from a city high school with an enrollment of approximately 3,000 students. From that time until April 2, 31 additional mumps cases were reported in 10th, 11th, and 12th graders at the same school. Their ages ranged from 15 to 19 years. Two cases were black and 30 were white. Eighteen cases were male, and 14 were female. Half of the 32 cases had not received mumps vaccine. The school immunization records were reviewed. Vaccine was recommended for 538 students (approximately 18% of the student body) who did not have immunization records on file at the school and were therefore potentially susceptible. Residents of the Clear Lake - Seabrook area were advised through the media to check their immunization records. Mumps vaccine was recommended for those without a history of mumps illness or immunization.

In this outbreak, physician diagnosis was used to confirm a case, since serologic tests were not performed. The attack rate for unvaccinated students was 3%, whereas vaccinated students had a 0.6% attack rate. The risk for mumps in unvaccinated students was five times greater than that in the vaccinated population. The estimated vaccine efficacy in this outbreak was 79%.

For the 1986 - 87 school year, mumps immunization is required under Texas law only for school entrants through age 14. This age requirement will increase by one year for each subsequent school year. A physician licensed to practice in Texas may validate a history of mumps illness in lieu of a vaccine. An outbreak of this magnitude might have been prevented if all Texas students were required to be vaccinated against mumps.

Reported by: MA Canfield and CF Encarnacion, Harris County Health Department; J Harrison, City of Houston Department of Health and Human Services; and M Thatcher, RN, Clear Creek Independent School District.

* * *

FDA SAFETY ALERT: POSSIBLY CONTAMINATED DURA MATER

On April 29,1987, the Food and Drug Administration issued an alert to physicians regarding the potential risk of transmitting Creutzfeldt-Jakob Disease (CJD) to surgical patients through possibly contaminated batches of human dura mater transplant material and asked that physicians check their stocks for these batches. **Although human dura mater is used principally in neurosurgery, it is also used in other procedures, including orthopedic, otologic, dental, urologic, gynecologic, and cardiac surgery.**

The material in question is an imported, commercially prepared dura mater of human origin, Lyodura, processed by B. Braun Melsungen AG of the Federal Republic of Germany and distributed by Tri Hawk International of Montreal, Canada. (Lyodura is a registered trademark of B. Braun Melsungen AG.) The batches in question were packaged in 1982 and can be identified by a first digit of "2" in their four-digit lot numbers. One of these lots, number 2105, has been associated with the first identified case of CJD following the use of a human dura mater graft, as reported by the CDC in the February 6, 1987, issue of MMWR.

To diminish the risk of transmitting CJD, a rare but lethal disease, the FDA recommends that physicians dispose of all Lyodura from packages bearing lot numbers beginning with the digit "2", as well as unmarked pieces of this product that may remain in stock. The FDA also requests that physicians or their staff report to the FDA any other cases of CJD that may be associated with the use of human dura mater grafts.

To report cases, or for further information, please contact: Gordon C. Johnson, MD, Center for Devices and Radiological Health, Food and Drug Administration, 8757 Georgia Avenue, Silver Spring, Maryland 20910; 301/427-7034.

Because presently known procedures to sterilize human dura mater are not sufficient to completely inactivate the CJD agent, and because even the most stringent donor screening cannot exclude asymptomatic carriers of CJD, the use of any human dura mater product carries some risk. The best method to minimize the risk is to screen donors adequately. Also, co-mingling materials from various donors during processing should be avoided. The FDA strongly recommends that users of dura mater choose only products from known sources which retrieve, process, and handle the material according to guidelines such as those of the American Association of Tissue Banks.

TEXAS PREVENTABLE DISEASE NEWS (ISSN 8750-9474) is a free, weekly publication of the Texas Department of Health, 1100 West 49th Street, Austin, TX 78756-3180. Second-class postage paid at Austin, TX. POSTMASTER: Send address changes to TEXAS PREVENTABLE DISEASE NEWS, 1100 West 49th Street, Austin, TX 78756-3180.

TEXAS PREVENTABLE DISEASE NEWS
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3180

SECOND CLASS POSTAGE PAID AT AUSTIN, TX

RETURN POSTAGE GUARANTEED

EAT RIGHT