
Between the 15th to 17th of January 2008, 92 patients sought medical care at hospitals and primary health care centers in Najran city, complaining of gastrointestinal symptoms: diarrhea, fever, vomiting, nausea, and abdominal pain, after eating from a newly opened restaurant. An epidemiological investigation was started to identify the food item(s) responsible for the outbreak and determine the source of infection.

A case control study was conducted. A case was defined as any person who ate from the restaurant between 142000/1 to 162008/1 and developed diarrheal illness within two days of food consumption. A control was defined as any person who ate from the same restaurant within the same time period and had not developed diarrheal illness during the period of the outbreak. A sample of 50 cases and 50 controls were obtained.

All the cases developed diarrhea (100%), fever (92%), abdominal pain (88%), nausea (84%), vomiting (36%) and chills (32%). Mayonnaise salad demonstrated the highest attack rate (AR) and Odds Ratio (OR) (AR = 93.8%, OR = 21.0, 95% CI = 2.6 - 166.5, P<0.001), followed by broasted meal (AR = 84.4, OR= 19.5, 95% CI = 6.9 - 54.4, P<0.001). Among those who had eaten chicken shawarma, 84.6% became sick (OR=6.8, 95% CI = 1.4 - 32.4, P<0.007).

Salmonella enteritidis group D was isolated from 80% of the patients who consented to give stool or rectal swab specimens. All cultures taken from the restaurant food handlers and food items showed no growth for any pathogens. On inquiry, it was found that Mayonnaise was prepared at the restaurant from blending egg yolk, oil and garlic. This was done by restaurant staff two to three times a week. During the day, most of the prepared mayonnaise was distributed in small containers to be served with the broasted meal and kept not far from the oven. At the end of each day, unused mayonnaise was kept for use on the following day, when it was sometimes mixed with a new batch of mayonnaise.

Editorial notes: This study is a classical example for a Salmonella food poisoning outbreak, where the clinical, epidemiological, and laboratory data point to Salmonella enteritidis group D as the most likely causative organism.

In the USA, review of results of laboratory-confirmed food poisoning surveillance showed that Salmonellosis was the second cause of food poisoning in 1997.1 A similar study in Saudi Arabia reviewed all computerized data for foodborne diseases for the years 1991 - 1993 reported 781 events of food-borne diseases from 18 regions. There were 6,052 cases, of which 3,515 required hospitalization. No deaths due to foodborne disease were reported. The highest rate was reported from Riyadh region, followed by Taif. Food prepared in restaurants accounted for 32% of events. Staphylococcus aureus was the most commonly implicated organism, followed by Salmonella. The most common contributing factors were poor storage, unsafe food sources and inadequate refrigeration.2 Another study in the Eastern province reported that Salmonella was the causative organism in 33% of food poisoning outbreaks during the period 1991-1996.3

The most common source of Salmonella food poisoning is poultry, meat, milk, cream and eggs. Investigations of Salmonella outbreaks indicate that its emergence is largely related to consumption of poultry or eggs.4

This common source outbreak of Salmonella resulted from restaurant prepared mayonnaise. The serotype enteritidis suggest that the organism originated in the egg and raw egg product. Heavy contamination probably resulted from temperature abuse of mayonnaise and eggs causing high infectivity.

To prevent foodborne outbreaks in general, it is required that food handlers wash their hands thoroughly and frequently, before, during and after handling the food; use clean gloves or utensils while handling food; maintain a sanitary kitchen; thoroughly cook meats; avoid cross contamination between raw and cooked food; protect prepared foods against rodent and insect contamination; reduce time between food handling and service; and maintain proper temperatures of cooked foods.2,5

Specific additional measures for prevention of Salmonellosis outbreaks include improved hygienic practices in poultry farms and abattoirs, avoidance of eating raw or cracked eggs, and effective chemotherapy of infected food handlers and discouraging them to handle food while shedding the organism.4

It was recommended to prohibit the practice of mayonnaise preparation at restaurants and advocate the use of packed commercial pasteurized mayonnaise instead. Restaurant supplies of raw food should be kept immediately after purchasing in refrigerators. Other concerned Saudi authorities should be involved in order to intensify the supervision of restaurants and food handlers.

Figure 1. Gastroenteritis cases by Incubation Period after eating in a restaurant in Najran, January 2008.

(Continued on page 7)
Food Borne Outbreak in Najran City, Saudi Arabia, January 2008 cont...

(Continued from page 5)

References:

Department of Preventive Medicine:
- Dr. Khalid Al-Zahrani, Assistant Deputy Minister for Preventive Medicine, and SEB Supervisor
- Dr. Nasser Al-Hozaim, General Director, Parasitic and Infectious Diseases Department
- Dr. Amin Mishkhas, Director, Infectious Diseases Department

Field Epidemiology Training Program:
- Dr. Mohammed Al-Mazroua, FETP Supervisor, SEB Editor-in-Chief
- Dr. Randa Nooh, Consultant Epidemiologist, Bulletin Editor
- Dr. Abdul Jamil Choudhry, Consultant Epidemiologist.

Saudi Epidemiology Bulletin (SEB) is published quarterly by the Department of Preventive Medicine and the Field Epidemiology Training Program (FETP) of the Ministry of Health.

Mark your calendar...

Inside the Kingdom
Location: King Faisal Hall, Intercontinental Hotel, Riyadh.
Contact: Saudi Association for Health Informatics, P.O.Box: 90394
Postal Code: 11613, Riyadh, Saudi Arabia.
Tel: +966 - 1 - 2520088 Ext. 43447, Ext. 13896,
Fax: +966 - 1 - 2520088 Ext. 43734
Website: http://www.saudiehealth.com

Outside the Kingdom
September 20-24, 2008: XVIII WORLD CONGRESS OF EPIDEMIOLOGY AND VII BRAZILIAN CONGRESS OF EPIDEMIOLOGY
Location: Brazil/ Porto Alegre
Contact: Congress Secretariat
Website: www.epi2008.com

Was there a link between human TB cases and the Bovine TB outbreak among cows, cont...

(Continued from page 4)

transmission to humans were almost blocked. However, this study showed that there may be some possible indicators of an epidemiological link between the outbreak of bovine TB among cows in Madinah and the human TB cases. Those indicators include reporting a long past history of contact with cattle and consuming raw milk. However, these epidemiological indicators do not provide any confirmation of a link. A confirmatory laboratory test is therefore required to specify the strains of the isolated mycobacteria from cows and humans. The new technique of DNA fingerprinting of mycobacteria is the most useful tool to prove any link of disease in the two populations. TB surveillance among humans and all types of cattle in Madinah in the upcoming years is vital to follow the disease trend and evaluate control measures.

References:
6- Cousins DV, Dawson DJ. Tuberculosis due to Mycobacterium bovis in the Australian population: cases recorded during 19701994-. Int J Tub and Lung Dis. 1999; 3(8):715721-.