Foodborne outbreak in Ahad Rafidah, Saudi Arabia, February 2009.

On Friday 27 February 2009 at 5.30 pm several cases of gastroenteritis arrived to the emergency department of Ahad Rafidah hospital, Asir region. The main complaints were diarrhea, abdominal pain and fever. Preliminary interviews revealed that all of them belong to one extended family who shared a reception dinner at the home of one of them on Wednesday 25 February at 9.30pm. A team from the Field Epidemiology Training Program (FETP) joined the investigation to identify the food items responsible for the outbreak and determine the cause of infection.

A retrospective cohort study was conducted to identify food items and other contributing factors responsible for the outbreak. Case definition included any guest who developed any of the following symptoms: diarrhea, nausea, vomiting, abdominal pain, or fever, after eating dinner on Wednesday 25th of February at 9.30 pm.

Data was collected via face to face interview of all family members who had attended the implicated dinner, using a food-borne disease questionnaire that inquired on demographic data, clinical presentation, times when the symptoms appeared, whether they were admitted to hospital or not, and detailed history of food items consumed. After that, the laboratory results of the blood and stool cultures were collected from the division of preventive medicine in Asir health directorate.

Data were entered, tabulated and analyzed using Epi-Info software. Two by two (2x2) tables were constructed to compare the attack rate of gastroenteritis by exposure to different food items. Relative risk was used to identify food items causing the gastroenteritis and 95% confidence intervals were calculated.

Out of the 35 guests, 27 matched the case definition with attack rate of 77.1%. Ages ranged between 2 to 55 years, with a mean of 20 years. The male: female ratio was 1:1.5. The main symptoms were abdominal pain (100%), diarrhea (92.6%) and fever (77.7%). Twenty (74%) of the sick people were initially hospitalized. All recovered without complications, except for 3 (11.1%) who had bloody diarrhea, two of whom were 2 years old. By the morning of Wednesday the 4th of March 2009, all of the patients had been discharged.

The incubation period ranged from 36 to 63 hours, with a mean of 50 hrs and a median of 48 hrs. Among 6 food items consumed, meat (Relative Risk RR= 9, 95% CI = 1.42-57.12), and rice (RR= 3.7, 95% CI = 1.11-12.36) were significantly associated with illness (Table 1).

Out of the 24 stool samples collected from cases 5 (20.8%) were positive for Salmonella, 4 (16. 4%) were positive for Amoeba and 4 (16. 4%) were positive for both.

On inspection of the kitchen where food preparation took place, general hygiene and cleanliness of the food containers were not adequate. Water supply was of unknown source and date. No food remains were found to obtain food samples. Inspection of the two food handlers was satisfactory; however, one of them had positive stool cultures for Amoeba, but neither had Salmonellosis.

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Editorial notes: Food borne disease (FBDs) is a general term for health problems caused by consumption of contaminated food. They are classified as intoxication or infection based on the causative factor.[1,2]

During the period from 1416 through 1425H, reported outbreaks of FBDs in Saudi Arabia were (3,877) with a total of (26,707) cases, more than half of them were hospitalized. Salmonella species was attributed to 41.4% of these outbreaks.[3]

In spite of the fact that the immediate source and reservoir could not be clearly identified, meat and rice were the most probable immediate sources of infection. Based on the incubation period, clinical picture and results of stool cultures, Salmonella was considered the causative agent of this foodborne outbreak in presence of co infection by Entamoeba histolytica.

References:

1. Centers for Disease Control and Prevention (CDC). Diagnosis and Management of Foodborne Illnesses. MMWR Weekly Rep. January 26, 2001 / 50(RR02);1-69.
2. Louisiana Office of Public Health – Infectious Disease Epidemiology Section, Food-borne Outbreak Investigation. Bioterrorism Manual. Revised 12/21/2004.
3. Ministry of Health. Food Poisoning Accidents during the years 1421-1422. Annual Report. Riyadh (KSA): Food Poisoning Department, Ministry of Health; 2002.

Table 1: Attack rates and relative risks for food items of food poisoning outbreak in Ahad Rafidah, Saudi Arabia February 2009.

Food items	Eaters		AR %	Non Eaters		AR %	RR	CI 95%
	Ill	Well		Ill	Well			
Meat	26	0	100	1	8	10	9	57.12-1.42
Rice	25	2	90	2	6	30	3.7	12.36-1.11
Meglgal	15	7	70	12	1	90	0.7	1.02-0.53
Yogurt salad	9	5	60	18	3	90	0.75	1.15-0.49
Green salad	7	4	60	20	4	80	0.76	1.24-0.47
Dessert	17	7	70	10	1	90	0.78	1.08-0.57