

Salmonella Food Poisoning Associated With Macaroni Salad in a Labourers Camp- State of Qatar, 2010

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Abstract

On 17th Nov 2010, an outbreak of acute gastroenteritis occurred among labourers at the Rass Laffan Industrial City. The aim of this study was to identify the agent and the source of the outbreak in order to stop it, develop control measures and prevent future outbreaks. A case-control study was conducted to study this outbreak. A total of 85 cases were randomly selected as well as 85 controls. Both groups completed a structured questionnaire. In addition, stool culture from patients and food handlers as well as food samples were investigated to determine the pathogen and the possible source of infection.

About 300 labourers developed the disease; attack rate is 28.5%. Diarrhoea and abdominal cramps were the most common symptoms. The median incubation period was 15 hours. Cases were more likely than controls to have eaten macaroni salad 97.6% and 27.3% respectively with OR 109.3 (CI: 25-484). Stool culture of 6 patients and 3 food handlers were positive for *Salmonella* group D and none of the food item showed microbial growth. The findings of this study indicate that the causative agent of this outbreak is *Salmonella* group D and the possible source of infection is macaroni salad, which was mixed with raw eggs.

Keywords: Food borne outbreak; Case-control study; Salmonella group D; State of Qatar

Introduction

Food-borne infections are common and constitute an important health and economic burden globally. Among the factors responsible for this burden are centralization and globalizations of food supply, increasing microbial resistances to antibiotic and growth of immunosuppressed subpopulations [1,2]. Many studies indicate that most outbreaks of food borne acute gastroenteritis occur in places of mass feeding such as institutions, schools, restaurants, mess halls, and military units [3-9].

Non-typhoidal Salmonella is one of the most reported causes of food-borne infections [1]. Food products of animal origin (contaminated meat, poultry, eggs, and dairy products) are considered the most commonly identified source of *Salmonella* Infection [3,8-13]. Eating undercooked eggs or meals prepared with uncooked eggs is a well-defined risk factor; in the last two decades, many salmonella outbreaks related to raw or undercooked egg consumption have been reported in deferent parts of the world [1,3,14-16].

Salmonella bacteria are classified into different groups (B, C, D, and E); within each there are many serotypes. More than two thousands of *Salmonella* serotypes have been described and all of them are considered pathogenic. Amongst them; *S. Enteritidis* and *S. Typhimurium* are the most commonly reported [17].

During a holiday week, in Nov 2010 an outbreak of non-typhoidal *Salmonella* gastroenteritis occurred in Rass Laffan industrial city in the State of Qatar, where hundreds of thousands of labourers work in the gas and oil industry. Most of these labourers live inside the city in different camps. In one of these camps that mainly accommodate Filipino workers, about 300 workers developed signs and symptoms of acute gastroenteritis. Stool samples were collected from 6 case; all of which were positive for *Salmonella* group D. The present outbreak was investigated to determine its original source and to decide on its possible food vehicle to stop the current outbreak and prevent later ones.

Subjects and Methods

Epidemiological investigation

Case definition: For the purpose of this epidemiological investigation we defined a case as "A person with diarrhoea (three or more loose stools during a 24-hours period) who has attended the Filipino Mess Hall (RLM2) in the five days after 16th Nov 2010".

Case finding: The cases were found through the mandatory reporting of food poisoning disease by peripheral health services to the Communicable Disease Control and Prevention (CDC) department at the Supreme Council of Health (SCH) and by enquiry among the regional primary health centres and hospitals. Preliminary epidemiological investigation suggested that human infection with *Salmonella* was probably associated with the ingestion of food at the Filipino Mess Hall at Rass Laffan industrial city.

Case-control study: To determine if a particular food item was associated with the outbreak a case-control study was conducted. Of the total 300 cases, 85 were randomly selected to participate in the study. Besides, 85 controls were randomly selected. A control subject was defined as any person who is served by the Filipino Mess Hall and lives in the same campus with cases and who didn't experience gastrointestinal illness.

A questionnaire was developed by the CDC investigation team to collect information on the outbreak. It included questions on personal

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