

النشرة الوبائية السعودية تصدرها وزارة الصحة الوكالة المساعدة للطب الوقائي وبرنامج الوبائيات الحقلية المجلد التاسع - العدد الأول - يناير - مارس ٢٠٠٢

Salmonella Food Poisoning Outbreak in Riyadh, Saudi Arabia, 2001

On 21st June, 2001 several patients presented to the Emergency Room of Prince Salman Hospital, Riyadh, Saudi Arabia with symptoms of gastroenteritis. They all gave the history of having eaten food from a restaurant in Oraiya – Riyadh, the previous night. In response to notification to the health department, the Field Epidemiology Training Program assigned a team to investigate this outbreak, identify its source, assess its extent, and to suggest recommendations to prevent occurrence of similar outbreaks in future.

After initial interviews with the patients and review of hospital records, a case definition was developed. A case associated with the outbreak was defined as any individual who had developed diarrhea (more than three loose motions per 24 hours) along with any of the following symptoms: Abdominal pain, fever or vomiting; within three days of eating at the mentioned restaurant on 20th June, 2001. Hospitals, health centers and private polyclinics geographically related to the restaurant in Central and South-West of Riyadh were searched for cases including 4 government hospitals, two private hospitals and 8 private polyclinics. With the help of this health care record, interview of the cases and the driver of the restaurant; a list of people exposed to the restaurant's food on the stipulated day was prepared. All these patients and unaffected family members were interviewed about the food eaten from the restaurant using a structured questionnaire. The restaurant was also inspected for food hygiene. Routine preparation, source, transport, storage and handling of food was reviewed by interviewing the staff, who were in prison at the time of study. Stool samples of restaurant staff and most of the cases were collected for laboratory investigation.

A total of 147 individuals were interviewed, out of whom 139 (94.5%) were Saudis. 68 (46.3%) of interviewees developed the food poisoning symptoms. Among them, in addition to diarrhea (100%), common manifestations were

(Continued on page 2)

Index

Salmonella Food Poisoning Outbreak in Riyadh, Saudi Arabia 2001, cont.....	2
Meningococcal Carriage Among Hajjis in Makkah 1421 H	3
Outbreak of Adenovirus Acute Respiratory Disease in Al Ergeen, Aseer, Southern Saudi Arabia, April 2001 .	5
SEB Arabic Page	6
Calendar.....	7
Notifiable Disease Reports	8

Salmonella Food Poisoning Outbreak in Riyadh, Saudi Arabia 2001, cont

fever (86.8%), abdominal pain (83.8%), vomiting (70.1%), nausea (61.7%) and chills (58.8%). All the cases recovered completely without any serious complication. The mean age of cases was 18.3 years (± 13 years) with a male to female ratio of 1: 0.9. The median incubation period was 8 hours and the epidemic curve suggested a common point source outbreak. Out of 44 stool samples collected from cases, 42 (95 %) grew (*Salmonella* group D non-typhi). Further subtyping was not possible due to want of technical resources.

Among food and drink items served on June 21, very high attack rates of food poisoning symptoms were found among people who had eaten mayonnaise (98%), chicken shawarma (97%) and potatoes (96%). However, when compared with people who had not eaten these food items, it was observed that the risk ratio for chicken shawarma was much higher (RR = 15.9, 95% CI= 6.8 – 37.2), as compared to mayonnaise (RR=5.2, 95% CI =3.4-7.9) and potatoes (RR =5, 95% CI=3.3 – 7.7).

There was no history of recent diarrhea or isolation of salmonella from the food handlers, all of whom possessed a valid health certificate despite presence of multiple infected skin lesions over both hands of the shawarma cook, reflecting poor level of hygiene and personal care. However, the manager, who had also eaten shawarma that day developed food poisoning and had stool samples positive for salmonella. No *Salmonella* was isolated from any food item present in the restaurant at the time of study.

Review of chicken shawarma preparation procedure at the restaurant showed that chicken was exposed to above freezing temperature for about 9 hours during travel and marinating, followed by exposure to low heat during cooking for up to 10 hours, which support multiplication of salmonella in the meat.

This food borne *Salmonella* outbreak was most probably caused by chicken shawarma. Chicken was the most likely source of infection, while time-temperature abuse was the most

important contributing factor leading to this outbreak.

— Reported by: Dr. Abdullah Al Azeri, Dr. Abdullah Al Rabea, Dr Khaled Bajri, Dr. Randa Nooh (Field Epidemiology Training Program).

Editorial note: Foodborne illnesses are important public health problems world wide, affecting both developed as well as developing countries,¹ leading to substantial costs in public health terms and serious losses in terms of morbidity and mortality.¹ *Salmonella* species and *Staph. aureus* are the most commonly implicated organisms.² There has been a marked increase in the overall incidence of salmonellosis being reported world wide,¹ particularly poultry associated.³ In the U.S.A. for instance there was a 20% increase in incidence of Salmonellosis during 1999 compared to 1998, reaching up to 17.7 per 100,000 population.³ Salmonellosis is commonly manifested by an acute enterocolitis with sudden onset of headache, abdominal pain, diarrhea, and fever. There are many different types of *Salmonella*, however, most cases are caused by two serotypes: *S. enteritidis* and *S. typhimurium*. Salmonellosis in humans is contracted mainly through ingestion of contaminated food, water, or milk (raw and dry). Foods of animal origin such as poultry, eggs, and beef are the main source. Raw beef, salami and sausages have all been associated with

Salmonella outbreaks in the USA.³

In 1984, a national policy for reporting, notifying and recording incidents of bacterial food poisoning in the Kingdom of Saudi Arabia was established.⁴ Most outbreaks of food poisoning in Saudi Arabia have been attributed to *Salmonella* species, chicken shawarma sandwiches being repeatedly implicated as vehicle of transmission.^{5,6} In a study conducted in the Eastern Province, *Salmonella* species were identified in 45 (33.6%) out of 134 food poisoning outbreaks occurring between 1991 – 1996. *Salmonella* organisms were isolated from 12% of shawarma samples.⁵

In this study, the absence of diarrheal illness in food handlers and their negative stool cultures also point to chicken shawarma as the likely source of *Salmonella*. The recovery of *Salmonella* from the manager's stool culture was probably due to his eating shawarma rather than an initial *Salmonella* infection. Clinical as well as laboratory data point to *Salmonella* group D non-typhi as the most likely causative agent of this outbreak and chicken shawarma as the most probable implicated food item. This is supported by the following epidemiological and laboratory findings; First, the median incubation period of 8 hours, and yielding of the organism from 42 cases out of 44 (95%) are consistent with salmonellosis; Second, a strong significant association of cases with chicken shawarma was

(Continued on page 7)

Table 1: Attack rate by individual food items served at the restaurant during outbreak of food poisoning

Food item	ATE			DID NOT EAT			RR	95%CI
	Ill	Total	AR %	Ill	Total	AR %		
Chicken shawarma	63	65	96.6	5	82	6.1	15.9	6.8-37.2
Mayonnaise	50	51	98	18	96	18.8	5.2	3.4-7.9
Potato	50	52	96.2	18.1	95	18.9	5	3.3-7.7
Cucumber	41	76	53	27	71	38	1.4	0.9-2.04
Tomato	46	79	59.2	22	68	32.4	1.8	1.2-2.7
Rice	6	79	7.6	62	68	91.2	0.08	0.4-0.18
Broasted chicken	1	5	20	67	142	47.2	0.4	0.07-2.5
Cocktail	0	2	0	68	145	46.9	0	-

Meningococcal Carriage Among Hajjis in Makkah, 1421 H

Meningococcal meningitis is a major health risk both in developed as well as developing countries, especially under crowded conditions.¹ Every year approximately two million pilgrims from over 140 countries gather in Saudi Arabia to perform Hajj. In recent years, a number of outbreaks related to Hajj have been reported. Approximately 400 cases of meningococcal disease caused by *N. meningitidis* serogroup W135 were identified worldwide related to Hajj 1420 H (2000 G).² The Saudi Arabian government requires all pilgrims to be vaccinated against Meningococcal meningitis, however, vaccination does not protect against nasopharyngeal carriage of the bacteria, which is the primary source of infection.³

This study was conducted to estimate the *N. meningitidis* carriage rate among pilgrims in the Pre and Post Hajj period of 1421 H. It was conducted among Hajjis arriving through King Abdul Aziz International Airport, Jeddah, using a descriptive longitudinal design.

Based on the endemic pattern of meningitis, Hajjis were stratified into three groups: the first group included Hajjis from endemic countries such as South Asian and African meningitis belt countries; the second group included Hajjis from non-endemic countries such as Malaysia, Indonesia, and Europe; and the third group comprised domestic hajjis. The estimated sample of 740 was allocated equally

among the three groups. In the pre-Hajj period, for the international Hajjis, six incoming flights were selected randomly. Forty-one Hajjis were selected randomly from each flight at passport check area. The same method of selection was applied to departing flights to recruit the post-hajj sample. Regarding domestic Hajjis, three Hajj missions (Hamla) were randomly selected at King Khalid International airport in Riyadh, before traveling to Makkah. Eighty two Hajjis were selected from each mission. After performing Hajj rituals, a similar sample was selected from those three missions at the last day of camping in Mina. A structured questionnaire containing demographic data and vaccination status was filled by personal interview. A pharyngeal swab was taken from each Hajji for culture and typing of *N. meningitidis* at Jeddah Regional Laboratory.

A total of 1458 Hajjis were included in the study, 715 pre-Hajj and 743 post-Hajj. Males constituted 74.3% of pre-Hajj and 72.3% of post-Hajj sample. The study showed that there were 57 (8%) *N. meningitidis* carriers in the pre-Hajj group. The carriage rate according to nationality was 21.3% among Indians, 20.5% among Bengalese, 11.1% among Sudanese, and only 3.4% among domestic hajjis. In the post-hajj group there were 77 (10.4%) carriers; the carriage rate was 53.0% among Malaysians, 7.7% among Indonesians, 6.7% among Bengalese,

and 6.3% among Nigerians. Malaysians had the highest change in carriage rate (+51.3%), followed by Indians (-16.8%), Bengalese (-13.8%), Sudanese (-8.4%) and Indonesians (+6.4%) (Table 1). Carriage rate increased with age, from 4% among those under 30 years old, to 11% among those aged 60 years and above pre-Hajj, with a similar pattern in the post-Hajj sample. There was no significant difference in carriage rate between genders.

Almost half (50.9%) of the pre-hajj *N. meningitidis* isolates and 46.8% of the post-hajj isolates were non-groupable. Serotype W135 was among only 5.3% of pre-Hajj carriers, compared to 44.2% of post-Hajj isolates. For the B serotype, the percentage decreased from 15.8% to 3.9%, and for serotype X from 14% to 3.9%. Serotypes A and Y were detected in 5.3% and 7% of pre-Hajj carriers, respectively, and were absent in post-hajj sample. In the pre-Hajj sample, the risk of meningococcal meningitis carriage was 66% less among those vaccinated compared to non-vaccinated. However, in post-hajj, the risk of meningococcal meningitis carriage was 65% higher among those vaccinated compared to non vaccinated. Both the decrease or increase in risk were not statistically significant.

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Editorial note: *Neisseria meningitidis* is a Gram-negative encapsulated diplococcus, with at least twelve serogroups. Annually, it accounts for approximately 300,000 cases of bacterial meningitis and more than 30,000 deaths.¹ Although group A and C account for most epidemics, groups B

Table 1: Meningococcal meningitis carriers and nationality among hajji 1421 H

Nationality	Pre Hajj			Post Hajj			Percentage change
	Sample size	No. of carrier	% for positive	Sample size	No. of carrier	% for positive	
Indonesia	77	1	1.3	78	6	7.7	+6.4
Malaysia	76	2	2.6	76	41	53.9	+51.3
Syria	77	6	7.8	76	6	7.9	+0.1
Sudan	72	8	11.1	74	2	2.7	-8.4
Nigeria	74	5	6.8	79	5	6.3	-0.5
Bangladesh	73	15	20.5	75	5	6.7	-13.8
India	61	13	21.3	66	3	4.5	-16.8
Saudi Arabia	205	7	3.4	219	9	4.1	+0.7
Total	715	57	8	743	77	10.4	+2.4

Meningococcal Carriage Among Hajjis in Makkah 1421 H, cont

and W-135 have been incriminated in recent years. Other serogroups are of little epidemiological significance. The disease is widespread in the so-called "meningitis belt" which covers sub-Saharan Africa, from Ethiopia in the east to Senegal in the west. In this area particularly, epidemic waves are seen every 8-14 years, killing many thousands of school children and young adults, often leaving survivors with serous lasting effects.^{1,2} The most recent Meningococcal meningitis epidemic of 1996 has resulted in approximately 300,000 reported cases, the most affected countries were Nigeria, Niger, Burkina Faso, and Mali.⁴

Humans are the main reservoir as cases or carriers and transmission is by direct contact, including respiratory droplets from nose and throat of infected persons. Transient nasopharyngeal carriage rather than disease is the normal outcome of Meningococcal colonization. Asymptomatic meningococcal carriers are the primary source of transmission of infection under both epidemic and endemic conditions. The risk of epidemic increases with the percentage of carriers in the population.^{1,4} In countries with endemic disease, 5%-10% of the population may be asymptomatic carriers.^{1,4}

The incubation period is 2-10 days, often 3-4 days during epidemics.⁵ Meningococci usually disappear from the nasopharynx within 24 hours after institution of treatment with antimicrobial agents to which the organisms are sensitive. While vaccination is (90

- 95%) effective in prevention of disease, it does not protect against nasopharyngeal carriage of the bacteria.⁵

The present study revealed that the Meningococcal carriage rate among pilgrims before and after Hajj was 8% and 10.4%, respectively. Pilgrims of India, Bangladesh, and African belt countries had the highest rate on their arrival, which corresponds to the endemic nature of the disease in these countries.⁶ Southeast Asian countries Malaysia and Indonesia had a low carriage rate (2.6% and 1.3% respectively) on arrival to Makkah, which is in accordance with the non-endemic nature of the disease in these regions.⁷

Comparing pre and post Hajj carriage rates, this study showed a decrease in carriage rates among Indians, Bengalese, and African belt countries pilgrims, which may be the result of administration of chemoprophylactic drugs to pilgrims from endemic areas by the Saudi government. An increase of the carriage rate was seen among Malaysian and Indonesian pilgrims which indicate their exposure to meningococcal organism, especially W135 serotype, during Hajj rituals. As compared to the other studies, W135 strain was one of the common serotypes found, especially after Hajj. W135 was not isolated from any of the domestic Hajjis in the pre and post Hajj periods, indicating that Saudi Hajjis are at equal risk of contracting W135 infection and are not its source.

On the basis of this study, it is recommended that the Quadrivalent vac-

cine containing (A, C, Y, W135) should be given to all pilgrims in their home countries at least two weeks before their departure for Hajj. Chemoprophylactic drugs should be continued to all pilgrims from endemic countries on arrival and to all hajjis from non-endemic areas on departure, so as to prevent the global hajj related transmission of meningitis.

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Table 2: Serotypes of meningococcal meningitis among carriers by nationality (pre & post hajj 1421 H)

Nationality	A		B		C		Y		W135		X		Z		Non Gr.		Total
	Pre hajj	Post hajj	Pre hajj	Post hajj	Pre hajj	Post hajj	Pre hajj	Post hajj	Pre hajj	Post hajj	Pre hajj	Post hajj	Pre hajj	Post hajj	Pre hajj	Post hajj	
Indonesia	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	4	7
Malaysia	0	0	1	0	0	0	0	0	0	26	0	0	0	0	1	15	43
Syria	0	0	1	0	0	1	0	0	1	0	2	0	0	0	2	5	12
Sudan	0	0	1	0	0	0	0	0	1	1	1	0	0	0	5	1	10
Nigeria	0	0	0	0	0	0	1	0	0	1	2	1	0	0	2	3	10
Bangladesh	2	0	2	3	0	0	1	0	1	0	2	0	1	0	6	2	20
India	0	0	4	0	0	0	2	0	0	3	1	0	0	0	6	0	16
Saudi Arabia	1	0	0	0	0	0	0	0	0	1	0	2	0	0	6	6	16
Total	3	0	9	3	0	1	4	0	3	34	8	3	1	0	29	36	134

Outbreak of Adenovirus Acute Respiratory Disease in Aseer, Southern Saudi Arabia, April 2001

In April 2001, in a school compound at Al Ergeen center, Sarat Abeedah, Aseer region, southern Saudi Arabia, a large number of male students reported headache, fever, cough, sore throat, rhinitis and gastrointestinal disturbance. The same symptoms appeared a few days later among students in a female school compound. A team from the Field Epidemiology Training Program (FETP), in collaboration with the local health authorities investigated this outbreak.

A descriptive cross sectional study was conducted, where all students and staff in both school compounds were interviewed. On the next day, residences of the cases were visited and the patients admitted into the hospital were also interviewed. A case was defined as any person in Al Ergeen area who had fever, headache, cough, myalgia, rhinitis in the outbreak area, with or without gastrointestinal symptoms (nausea, vomiting, diarrhea), within the period from 15/4/2001 to 7/5/2001. Since most cases had occurred after a recent change in water supply of the boys school, a waterborne cause of the outbreak was suspected. Water supply to each school and to houses in the district was thoroughly investigated.

A total of 622 individuals were included in the study; 312 males (50.2%) and 310 females (49.8%). The major constituent of the sample was students i.e. 576 (92.6%), in addition to 33 (5.3%) teachers, and 13 (2%) administrative and other personnel. Among males the median age was 16 years (range 2-55 years), and Saudis represented 97.8%. The median age for females was 13 years (range 4-43 years), and Saudis represented 99.4% of the total females.

The number of individuals who met the case definition was 156, representing 25.1% of the total population studied, among those 71.8% were males and 28.2% were females. The age group most affected was 16-20 years. The common symptoms were headache (54.2%), cough (50.5%), fever (49.2%), and rhinitis (40.8%). Males were 3.39 times at higher risk

of acquiring the disease than females. No serious cases or complications were reported. Only 19 cases were admitted to the hospital and were discharged within a couple of days without any serious complications.

The epidemic curve (Figure 1) indicates a person-to-person transmission of infection with a sequential gender spread, males followed by females. The spread of infection from male to female school compounds could have happened as a result of disease transmission among family members in the household environment. Laboratory investigations confirmed that the causative organism of the infection was Adenovirus (Adenovirus IgM ELISA).

— Reported by: Dr. Saleh Al Tammami, Dr. Khaled Bajri, Dr. Abdullah Al Rabeah, Dr. Randa Nooh (Field Epidemiology Training Program).

Editorial note: On the basis of available local information, the initial impression of the community and investigators was a common source outbreak, and recently changed water source was suggested to be the cause of outbreak. The water source for the male school had been a nearby well, which had been switched to Al-mashrou for reconstruction purposes. Suspicion was directed towards Legionnaires disease, which has similar clinical features and is known to affect populations with the same water supply.

Legionnaire's disease is caused by a gram-negative bacilli, that grows in water over 25°C in temperature, and

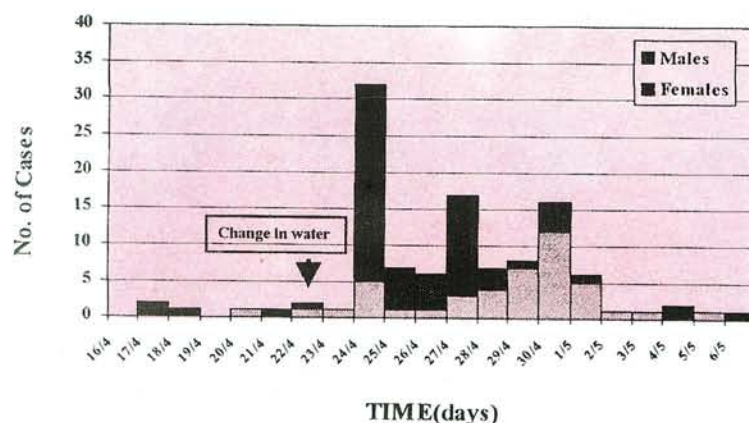
spreads by an aerosol route.¹ Males are affected twice as commonly as females, and the incubation period is 2 – 10 days. The characteristic picture of the disease is malaise, myalgia, headache, and fever. Half of the patients usually have gastrointestinal symptoms. A recognized epidemiological pattern of the disease has been observed in outbreaks among previously fit individuals staying in hotels, institutions or hospitals where shower facilities or cooling systems had been contaminated with the organism.^{1,2}

Laboratory investigations, however, confirmed that the causative organism was Adenovirus, which are human pathogens that commonly infect the respiratory and gastrointestinal tracts.³ Adenovirus infections are endemic, particularly among children, but may also cause epidemics of pharyngoconjunctival fever, keratoconjunctivitis, gastroenteritis, and acute respiratory disease. About 4 to 5% of clinically recognized respiratory illnesses in civilian populations are caused by adenoviruses.⁴ Person-to-person transmission is presumably the principal mechanism of spread of infection, along with fecal-oral, and occasionally waterborne transmission.⁴ The incubation period is between 3 to 10 days, with illness lasting 1 week or over. Diarrhea is more prominent than vomiting or fever, and respiratory symptoms are often present.⁵

Although the epidemiological investigative team were initially influenced towards the assumption of a water-related disease, this assumption changed after investigating the out-

(Continued on page 7)

Figure 1: Epidemic curve for adenovirus cases in Al Ergeen, Asir April 2001



ملخص باللغة العربية

البنات جميع المراحل (إبتائي، متوسط، ثانوي) ويبلغ عدد الطالبات ٣١٣ موزعات على النحو التالي: ١٣٧ طالبة بالمرحلة الابتدائية، ١٠٢ بالمرحلة المتوسطة، ٧٤ بالمرحلة الثانوية. مصدر المياه بالنسبة لمدرسة البنات مياه المشروع والذي يحضرها متعهد لهذا الامر وهو نفسه يغذي بعض المنازل داخل المركز وتستخدم هذه المياه للشرب والغسيل معاً.

لا توجد بقرى المركز أي شبكة للمياه، و إنما يعتمد إيصال المياه إلى المنازل على ثلاث طرق: مياه المشروع عن طريق الوايتات، مياه صحية تشتري بجوالين من أماكن بيع المياه المحلاة في المدن، مياه آبار خاصة لكل منزل. افتتح مشروع المياه الذي يغذي المنطقة من ١٦ سنة تقريباً وهو مصدر الماء الأساسي لكثير من المنازل.

وضع تصور أن سبب هذا الحدث قد يكون مياه الشرب، لذا تم اعداد استبيان اشتمل على المعلومات الشخصية والمرحلة الدراسية وبداية ظهور الأعراض وأهم الأعراض، ثم مياه الشرب والوضوء ومصادرها داخل المدرسة والمنزل، والسؤال عن وجود حالات في عائلات الطلاب من الصغار أو كبار السن. معظم الأعراض كانت ارتفاع في درجة الحرارة وصداع وكحة وخمول ورشح بالأنف والم بالبطن. معظم مصادر الشرب كانت من مياه المشروع ومعظم مصادر المياه للغسيل والوضوء داخل المدرسة والمنزل من مياه المشروع. تم زيارة بعض المنازل والسؤال عن المصابين وتعبئة الاستمارات ولوحظ وجود عدد غير قليل من الحالات التي تشتكي من نفس الأعراض التي ظهرت على طلاب وطالبات المدرسة. كذلك تم زيارة المصابين من غير الطلاب في منازلهم وتعبئة الاستمارات لهم. وهذه الحالات كان ظهورها متأخراً عن حالات طلاب المدارس.

وجد فريق الاستقصاء أن مصادر المياه المذكورة تغذي كافة منازل ومدارس المنطقة بينما ظهرت الحالات في منطقة وتجمعات محددة في أول الأمر ثم ظهرت في أماكن أخرى. وظهر حالات عديدة بالمنازل من غير الطلاب يستبعد معه وجود مصدر للوباء داخل المدارس فقط كالماء مثلاً، وكذلك عدم ظهور حالات في مدارس أخرى في المنطقة إلا بعد أيام وهي حالات قليلة، مع إن مصدر المياه كان واحداً. لهذه الأسباب بدأ التفكير يتجه إلى أن هذه الأعراض أعراض لمرض فيروسى انتشر بسرعة في مكان مزدحم كمدارس الأولاد، ومنها إلى البنات والمنازل. و قد تأكد لاحقاً بالفحوصات المخبرية وجود فيروس adenovirus.

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الساعة ٤ من فجر يوم الجمعة ١٤٢٢/٤/١. أكثر الأعراض التي ظهرت على المصابين هي الإسهال (١٠٠%)، الحرارة (٨٦،٨%)، المغص (٨٣،٨%)، القيء (٧٠،١%)، الغثيان (٦١،٧%) ثم الصداع (٥٨،٨%). تم أخذ مسحات شرجية أو عينات البراز من ٤٤ مصاب، تم عزل السالمونيلا مجموعة D من ٤٢ منهم (٩٥،٤%).

كانت الشاورما ذات علاقة مؤثرة بالتسمم الغذائي حيث أن نسبة الخطورة (Relative Risk = ١٥،٩ ومعامل الثقة (Confidence interval) يتراوح بين ٦،٨ إلى ٣٧،٢ مما يدل على ارتباط التسمم الغذائي بالشاورما، ووجد أيضاً أن الإصابة أشد ووقت الحضانة أقصر لدى من تناول كمية أكبر من الشاورما.

يتضح من خلال النتائج والأعراض الإكلينيكية أن شاورما الدجاج هو المسبب الرئيسي للتسمم الغذائي في الغالب وذلك لإرتفاع نسبة الإصابة بين من تناولوه وانخفاضها بين الأشخاص الذين لم يتناولوها. حرارة الجو وعمليات التذويب الغير مناسبة عاملان مهمان في حدوث التسمم الغذائي مما يلزم معه التوخي والحذر خصوصاً في فترة الصيف.

إعداد: د. عبدالله العزيري، د. عبدالله محمد الربيعه، د. خالد باجري، د. راندة محمد نوح (برنامج الوبائيات الحقلية).

تقرير عن الحالات المرضية في مركز العرقين، سرة عبيدة، أبها، ١٤٢٢هـ

في يوم الأربعاء ١٤٢٢/١/٢ تعرض مجموعة من طلاب مدارس البنين في مركز العرقين التابع لمحافظة سرة عبيدة بمنطقة عسير إلى ارتفاع في درجة الحرارة وصداع وقور عام وأعرض أخرى. قام فريق من برنامج الوبائيات الحقلية بعمل التفصي الوبائي لهذه الحادثة.

يضم مركز العرقين خمس قري وهي قرية بن نشوان وزهير وبشران ومنادية والحريق. توجد مدرسة البنين في هجرة زهير (العرقين)، مكونة من مبني حكومي من طابقين وتضم جميع المراحل الدراسية (إبتائي، متوسط، ثانوي). يبلغ عدد طلاب المدرسة ٢٨٢ طالب: ٩٦ بالمرحلة الابتدائية، ٧٤ بالمرحلة المتوسطة، و ١١٢ بالمرحلة الثانوية. مصدر المياه بالنسبة للمدرسة قبل بداية العام الدراسي كان بئر قريب من المدرسة وكانت المياه هذه مخصصة للشرب والغسيل معاً. في بداية هذا العام الدراسي أمنت المدرسة مياه محلاة عن طريق مديرية التعليم للبنين بمحافظة سرة عبيدة حيث تعاقبت مع أحد متعهدي المياه وخصصت ثلاثة خزانات للشرب، و خصصت مياه البئر للغسيل. في يوم ١/٢٧/١٤٢١ توقف استخدام البئر من أجل عمل إصلاحات وتم جلب مياه من المشروع الذي يغذي جميع القرى التابعة لمركز العرقين.

بالنسبة للطالبات، ظهرت أعراض المرض في مدرسة البنات بالعرقين بعد يومين أو ثلاثة من ظهور الأعراض بين الطلاب. تضم مدرسة

فاشية تسمم غذائي ببكتريا السالمونيلا في مطعم، حي العريجات، الرياض، ١٤٢٢هـ

في فجر يوم الخميس الموافق ٢٩ ربيع الأول ١٤٢٢هـ توافد العديد من الأشخاص على قسم الطوارئ بمسشفى الأمير سلمان بالرياض وهم يشكون من نزلات معوية على أثر تناولهم شاورما من مطعم بحي العريجات جنوب مدينة الرياض مساء يوم الأربعاء ٢٨ ربيع الأول ١٤٢٢هـ. تم تكليف فريق من برنامج الوبائيات الحقلية بعمل دراسة وبائية لمعرفة المسبب لحالات التسمم الغذائي ومدى انتشارها واقتراح التوصيات المناسبة لمنع تكرار مثل ذلك مستقبلاً.

قام فريق البحث بزيارة مديرية الشئون الصحية بالرياض للحصول على قائمة مبنية بالحالات المصابة توضح المستشفيات التي تم استقبالهم فيها. وقام فريق البحث بزيارة المستشفيات لحصر الحالات ومراجعة سجلات المصابين والتعرف على الأعراض والفحوصات المخبرية التي أجريت لهم. تم أخذ عينات عشوائية من الأطعمة المحفوظة الموجودة مثل: الدجاج والعصيرات، ومن الأواني ومكان إعداد الأغذية بالإضافة لأخذ مسحات من العاملين من المطعم.

تمت مقابلة سائق المطعم والحصول منه على قائمة بأسماء وتلفونات من تم توصيل طلبات لهم في ذلك اليوم. بعد ذلك تمت مقابلة الحالات وسؤالهم عن أشخاص آخرين تناولوا الطعام معهم من نفس المطعم ولم تظهر عليهم أعراض مرضية. كما تم ملا الاستبانة بالمقابلة الشخصية مع المصابين بمساعدة فريق مكافحة العدوى في المستشفى أو تلفونياً عند تعذر مقابلتهم. كانت الاستبانة تشتمل على كل البيانات الشخصية للمصاب، وقت تناول الطعام، وكميته و الأعراض المرضية، وتاريخ ووقت ظهورها، تنويم المريض من عدمه بالإضافة إلى العينات التي تم أخذها من الشخص وأنواعها. تمت مقابلة العاملين بالمطعم وعددهم ٨ عمال.

عرفت الحالة بأي شخص تناول طعاماً تم تحضيره يوم الأربعاء ١٤٢٢/٣/٢٨هـ وأصيب بالإسهال (أكثر من ثلاث مرات باليوم) مع أي من الأعراض التالية حمى، غثيان، قيء، ألم بالبطن.

تمت مقابلة ١٤٧ شخصاً من الذين تناولوا طعاماً من المطعم المذكور ووجد من بينهم ٦٨ (٤٦،٣%) حالة مصابة و ٧٩ (٥٣،٧%) حالة ضابطة (غير مصابة). من بين الحالات المصابة كان ٣٣ (٤٨،٥%) من الذكور و ٣٥ (٥١،٥%) من الإناث. تتراوح أعمارهم ما بين سنة واحدة و ٧٥ سنة بمتوسط (١٨،٣ سنة) وبانحراف معياري (١٣،٨ سنة). كان معظمهم من السعوديين (٩١،٢%) و ٤ (٥،٨%) أفغانيين وحالة واحدة (١،٥%) من كل من الجنسية الهندية والإندونيسية.

بين المنحنى الوبائي أن معظم الحالات ظهرت عند الساعة ٢ صباح فجر يوم الخميس ١٤٢٢/٣/٢٩هـ وحتى الساعة ٧ صباحاً من نفس اليوم وشكلت أكثر من ٧٠%. ظهرت آخر حالتين

Salmonella Outbreak, Riyadh, cont

(Continued from page 2)

demonstrated; and Third, serious time-temperature abuse during transportation and preparation of shawarma.

We suggest conduction of nationwide health education, and training programs that emphasize the importance of proper food handling practices, personal hygiene, and food sanitation.

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Outbreak of Adenovirus, cont

(Continued from page 5)

break in more detail, putting in consideration that the water sources supplied all the schools and houses in the region, whereas cases appeared in certain confined places (school compounds); different water dealers supplied the male and female school compounds; the onset of symptoms preceded the change in water supply in some cases; and the epidemic curve did not support the common source pattern of disease occurrence. The clinical picture of respiratory and gas-

trointestinal symptoms was suggestive of a viral infection, which affected the respiratory and gastrointestinal tracts, the symptoms of which spread fast in an overcrowded population in both schools. This assumption was supported by the presence of 3 peaks in the epidemic curve, suggesting person to person spread of infection. Laboratory investigation confirmed the diagnosis of adenovirus infection.

This investigation highlights that during an outbreak investigation, focus should not be on the most obvious suspected exposure alone, rather, the whole epidemiological picture should be looked into methodically.

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Selected notifiable diseases by region, Jan—Mar 2002

	Riyadh	Makkah	Jeddah	Taif	Madinah	Qassim	Eastern	Hasa	Hafr AlBatin	Asir	Bisha	Tabuk	Hail	Al Shamal	Jizan	Najran	Baha	Al Jouf	Goriat	Gonfuda	Total	
Measles	3	7	79	0	0	0	0	1	0	0	0	1	9	0	0	0	0	0	0	0	0	100
Mumps	22	14	23	6	16	10	14	10	8	8	6	6	4	3	5	7	0	0	2	0	0	164
Rubella	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Varicella	2688	161	1082	284	422	1092	1178	890	953	675	274	321	155	104	134	189	56	173	49	38	10918	
Brucellosis	83	14	6	23	27	247	57	5	45	185	48	1	94	23	21	45	12	24	7	13	980	
Meningitis mening	5	6	6	0	3	4	3	0	0	0	0	0	0	0	1	0	0	2	3	0	33	
Meningitis other	41	19	17	21	17	10	10	15	0	4	5	4	5	1	2	2	2	0	1	0	176	
Hepatitis A	42	16	35	11	28	88	11	2	57	95	20	106	53	16	54	37	70	42	10	9	802	
Hepatitis B	213	86	323	26	63	55	120	13	2	66	18	13	2	10	7	7	62	2	0	2	1090	
Hepatitis C	137	83	283	5	21	30	70	10	1	10	8	2	3	3	60	3	26	1	0	1	757	
Hepatitis unspecified	29	36	24	0	0	0	0	5	0	24	0	20	4	0	101	2	0	0	0	0	245	
Typhoid & pratyphoid	12	13	0	0	5	2	3	7	0	13	7	4	4	7	0	0	0	0	0	0	77	
Amoebic dysentery	13	5	355	9	11	11	27	4	13	101	18	0	9	0	30	13	0	0	0	0	619	
Shigellosis	28	0	7	2	5	7	17	6	4	0	6	4	0	4	4	11	0	0	1	0	106	
Salmonellosis	80	3	25	2	0	6	193	17	19	8	5	10	0	0	0	6	3	0	0	0	377	
Syphilis	1	0	13	0	0	0	8	2	0	0	4	0	0	0	0	0	0	0	0	0	28	
VD, other	5	0	29	0	0	0	20	11	4	8	1	0	1	0	10	0	1	0	0	0	90	

Comparisons of selected notifiable diseases, Jan - Mar 2001-2002

Disease	Jan-Mar 2002	Jan-Mar 2001	Change %	Jan-Mar 2002	Jan-Dec 2001	Disease	Jan-Mar 2002	Jan-Mar 2001	Change %	Jan-Mar 2002	Jan-Dec 2001
Diphtheria	3	0	300	3	0	Meningitis other	176	184	-4	176	604
Pertussis	4	4	0	4	35	Hepatitis A	802	686	17	802	3069
Tetanus neonat	7	3	133	7	27	Hepatitis B	1090	829	31	1090	3864
Tetanus other	3	0	300	3	8	Hepatitis C	757	609	24	757	2608
Poliomyelitis	0	0	0	0	0	Hepatitis unspecified	245	405	-40	245	1414
Measles	100	29	245	100	155	Typhoid & pratyphoid	77	82	-6	77	367
Mumps	164	262	-37	164	941	Amoebic dysentery	619	677	-9	619	2772
Rubella	1	16	-94	1	16	Shigellosis	106	197	-46	106	589
Varicella	10918	8059	35	10918	32642	Salmonellosis	377	369	2	377	1927
Brucellosis	980	1110	-12	980	4865	Syphilis	28	23	22	28	136
Meningitis mening	33	164	-80	33	316	VD, other	90	102	-12	90	395

Diseases of low frequency, Jan – Mar 2002

Yellow fever, Plague, Diphtheria, Poliomyelitis, Rabies, Hemolytic Uremic Syndrome: No cases

Peurperal Sepsis: one case (Jeddah)

Pertussis: 4 cases (Hail 1, Eastern 1, Jizan 1)

Tetanus neonatal: 7 cases (Makkah 6, Taif 1)

Echinococcosis: 1 case (Hafar Al-Batin)

Guillain-Barre syndrome: 19 cases (Riyadh 3, Easter 3, Madinah 2, Hassa 2, Asir 2, Makkah 1, Jeddah 1, Taif 1, Qassim 1, Hail 1, Baha 1, Jazan 1, fuda 1, Hail 1, Goriat 1)