

A *Salmonella* Induced Food Poisoning Outbreak Among One Hotel Employees, 2018

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Abstract

On May 23, 2018, a food poisoning outbreak occurred among the employees of a hotel located in Sanxia District, New Taipei City. After an on-site epidemiological case-control investigation, 34 out of the 49 employees were identified as cases, showing an attack rate of 73.9%. Case symptoms consisted of diarrhea (94.1%), abdominal pain (88.2%), limb weakness (76.5%), and fever (58.2%). The epidemic curve of onset date from cases was a single-peak; with an average incubation period of 16.3 hours and a standard deviation of 5.6 hours.

The analysis of the lunch and dinner dishes was performed using both logistic regression analysis and Fisher's exact test. The results showed that the mung bean soup was the cause of contamination ($p < 0.05$). *Salmonella* group O7 was detected as the pathogen of this outbreak from the anal swabs of 2 cases and 2 kitchen workers.

After a comprehensive investigation, the results indicated the outbreak might be a food poisoning incident caused by consumed mung bean soup contaminated with *Salmonella*. Therefore, we recommend that relevant precautions should be taken when storing cooked foods to avoid possible contamination.

Keywords: Food poisoning, case-control study, *Salmonella*

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Norovirus Outbreak in An Educational Center—Taoyuan, Taiwan, January 2018

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Abstract

On January 19th, 2018, over 90 of 142 seminar attendees suffered from gastroenteritis after a lunch provided by an educational center in Taoyuan. All participants ate the same kind of lunch box and fruit box at the time. Taiwan Centers for Disease Control conducted an epidemiological investigation to identify the scale of the outbreak, pattern of spread, implicated food and causative pathogen. We defined the cases as attendees of the seminar who had eaten the foods provided by the seminar and had 2 or more of symptoms, including abdominal pain, diarrhea, vomiting or fever, after 6pm on January 19th. Of 140 participants enrolled in the investigation, 72 (51.8%) met the case definition. The epidemic curve revealed a point source exposure. Median incubation period was 22 hours (range 12–67 hours). We conducted a cohort study and the results showed that illness was associated with eating pears (hazard ratio 3.9, 95% confidence interval 1.0–16.1). Stool specimens from 3 ill participants were positive for norovirus. The food worker washed the fruits with unchlorinated and unboiled underground water, and prepared the fruits with bare hands. We recommended practicing proper hands hygiene when handling fruits, and using water met the drinking water quality standard to wash fruits.

Keywords: Gastroenteritis outbreak, foodborne outbreak, norovirus, cohort study

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Weekly Data of Notifiable Infectious Diseases (by week of diagnosis)

Classification	Disease Diagnosed	Week 17★		Week 1-17			
		2020	2019	2020		2019	
				Total cases★	Imported cases	Total cases★	Imported cases
Category I	Plague	0	0	0	0	0	0
	Rabies	0	0	0	0	0	0
	SARS	0	0	0	0	0	0
	Smallpox	0	0	0	0	0	0
Category II	Acute Flaccid Paralysis	1	2	12	0	18	0
	Acute Viral Hepatitis type A	0	3	28	7	34	10
	Amoebiasis	5	6	83	44	102	51
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	2	2	0	0
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	9	55	55	131	130
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	1	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	3	0	0	0
	Malaria	0	0	1	1	1	1
	Measles	0	7	2	2	79	30
	Meningococcal Meningitis	1	0	4	0	2	0
	Paratyphoid Fever	0	0	0	0	2	1
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	10	8
Shigellosis	5	7	60	20	48	15	
Typhoid fever	0	2	5	3	8	8	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	0	2	2	1	1	
Category III	Acute Viral Hepatitis type B	2	2	30	2	35	1
	Acute Viral Hepatitis type C	6	11	209	2	188	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	1	0	6	0	6	2
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	7	0	6	1
	Haemophilus Influenza type b Infection	0	0	2	0	0	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	6	7	82	5	88	8
	Mumps	6	18	144	6	208	0
	Neonatal Tetanus	0	0	0	0	0	0
Pertussis	0	0	8	0	19	0	
Tetanus	0	0	4	0	0	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	1	16	0	23	1
	Endemic Typhus Fever	0	0	3	0	2	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	35	546	6	765	3
	Invasive Pneumococcal Disease	4	12	134	0	188	2
	Leptospirosis	2	2	15	0	16	0
	Listeriosis	3	4	37	0	59	0
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	0	0	4	1	1	0
	Q Fever	1	1	2	0	6	1
	Scrub Typhus	7	7	67	1	82	0
Toxoplasmosis	0	0	0	0	5	0	
Tularemia	0	0	0	0	0	0	
Category V	Ebola Virus Disease	0	0	0	0	0	0
	Lassa Fever	0	0	0	0	0	0
	Marburg Hemorrhagic Fever	0	0	0	0	0	0
	Middle East Respiratory Syndrome	0	0	0	0	0	0
	Coronavirus Infections	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	0	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
Severe Pneumonia with Novel Pathogens	31	-	429	374	-	-	
Yellow Fever	0	0	0	0	0	0	

- ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
- MDR-TB, Tuberculosis, Syphilis, Gonorrhoea, HIV Infection, AIDS, Hansen's Disease and Creutzfeldt-Jakob Disease are excluded from the table.
- Numbers of mumps and tetanus cases are summed up by the week of report.
- Since 2020/1/15, "Severe Pneumonia with Novel Pathogens" was listed as a Notifiable Infectious Disease.

Suspected Clusters

- Twelve clusters were reported during week 17, including 5 tuberculosis clusters, 4 diarrhea clusters, 1 upper respiratory tract infection cluster, 1 influenza-like illness cluster, 1 varicella cluster.

Imported Infectious Diseases

- There were 33 imported cases from 4 countries and Panshi fast combat support ship during week 17 of 2020.

Countries / Places / Diseases	Panshi fast combat support ship	Indonesia	Spain	Canada	USA	Total
Severe Pneumonia with Novel Pathogens	28		1	1	1	31
Amoebiasis		2				2
Total	28	2	1	1	1	33

- As of week 17 in 2020, there were 527 imported cases from 43 different countries / places. The top 3 countries are USA (90), Indonesia (85), UK (71).
- The three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (374), Dengue Fever (55), Amoebiasis (44).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The risk of locally-acquired infection cases decreased.

Weekly Data of Notifiable Infectious Diseases (by week of diagnosis)

Case diagnosis year		Week 18★		Week 1-18			
Classification	Disease Diagnosed	2020	2019	2020		2019	
				Total cases★	Imported cases	Total cases★	Imported cases
Category I	Plague	0	0	0	0	0	0
	Rabies	0	0	0	0	0	0
	SARS	0	0	0	0	0	0
	Smallpox	0	0	0	0	0	0
Category II	Acute Flaccid Paralysis	0	2	12	0	20	0
	Acute Viral Hepatitis type A	1	0	29	7	34	10
	Amoebiasis	4	6	87	44	108	54
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	1	2	2	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	1	7	56	56	138	137
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	1	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	1	0	4	0	0	0
	Malaria	0	0	1	1	1	1
	Measles	0	3	2	2	82	31
	Meningococcal Meningitis	0	0	4	0	2	0
	Paratyphoid Fever	0	0	0	0	2	1
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	1	0	0	11	9
Shigellosis	4	2	64	20	50	16	
Typhoid fever	0	0	5	3	8	8	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	0	2	2	1	1	
Category III	Acute Viral Hepatitis type B	4	4	34	2	39	1
	Acute Viral Hepatitis type C	11	12	219	2	200	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	6	0	6	2
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	1	7	0	7	1
	Haemophilus Influenza type b Infection	0	0	2	0	0	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	3	4	85	5	92	8
	Mumps	11	13	155	6	221	1
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	8	0	19	0
Tetanus	1	0	5	0	0	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	2	16	0	25	1
	Endemic Typhus Fever	0	0	3	0	2	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	37	546	6	802	5
	Invasive Pneumococcal Disease	0	5	134	0	193	2
	Leptospirosis	1	0	16	0	16	0
	Listeriosis	4	7	41	0	66	0
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	1	3	5	1	4	0
	Q Fever	0	1	2	0	7	1
	Scrub Typhus	2	7	69	1	89	0
Toxoplasmosis	0	1	0	0	6	0	
Tularemia	0	0	0	0	0	0	
Category V	Ebola Virus Disease	0	0	0	0	0	0
	Lassa Fever	0	0	0	0	0	0
	Marburg Hemorrhagic Fever	0	0	0	0	0	0
	Middle East Respiratory Syndrome	0	0	0	0	0	0
	Coronavirus Infections	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	0	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
Severe Pneumonia with Novel Pathogens	3	-	432	377	-	-	
Yellow Fever	0	0	0	0	0	0	

1. ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
2. MDR-TB, Tuberculosis, Syphilis, Gonorrhoea, HIV Infection, AIDS, Hansen's Disease and Creutzfeldt-Jakob Disease are excluded from the table.
3. Numbers of mumps and tetanus cases are summed up by the week of report.
4. Since 2020/1/15, "Severe Pneumonia with Novel Pathogens" was listed as a Notifiable Infectious Disease.

Suspected Clusters

- Eighteen clusters were reported during week 18, including 6 tuberculosis clusters, 7 diarrhea clusters, 1 upper respiratory tract infection cluster, 1 enterovirus cluster, 3 varicella clusters.

Imported Infectious Diseases

- There were 4 imported cases from 3 countries during week 18 of 2020.

Diseases	Countries			Total
	Senegal	Japan	Myanmar	
Severe Pneumonia with Novel Pathogens	2	1		3
Dengue Fever			1	1
Total	2	1	1	4

- As of week 18 in 2020, there were 531 imported cases from 43 different countries. The top 3 countries are USA (90), Indonesia (85), UK (71).
- The three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (377), Dengue Fever (56), Amoebiasis (44).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The risk of acquiring SARS-CoV-2 infection in Taiwan is low.

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