

Investigation of Acute Viral Hepatitis C Cluster in A Hemodialysis Unit in the Central Region, Taiwan, 2018

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Abstract

A hemodialysis unit in the central region reported 4 confirmed cases of acute viral hepatitis C (HCV) from April 25, 2018 to January 11, 2019. Two patients had the same HCV genotype and the viruses were sent to the Taiwan Center for Disease Control for sequencing. Gene sequencing showed 99.66% identical of C/E2 and 100% identical of NS5B. After investigation, we suggested that the dialysis unit staff should enhance hand hygiene and separate clean from contaminated areas of the mobile medical cart. This cluster was caused by the staff not following the infection control guidelines, thus highlights the importance of compliance with infection control measures in the hemodialysis unit.

Keywords: Acute viral hepatitis C, hemodialysis unit, cluster

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

Case diagnosis year		Week 27★		Week 1-27			
Classification	Disease Diagnosed	2021	2020	2021		2020	
				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	15	0	17	0
	Acute Viral Hepatitis type A	2	1	39	0	43	7
	Amoebiasis	1	2	103	34	124	71
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	1	1	3	3
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	0	5	5	60	60
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	0	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	7	0	8	0
	Malaria	0	0	1	1	1	1
	Measles	0	0	0	0	2	2
	Meningococcal Meningitis	0	0	2	0	5	0
	Paratyphoid Fever	0	0	2	0	0	0
	Poliomyelitis	0	0	0	0	0	0
Rubella	0	0	0	0	0	0	
Shigellosis	2	4	79	0	86	21	
Typhoid fever	0	0	1	0	5	3	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	0	0	0	2	2	
Category III	Acute Viral Hepatitis type B	1	2	79	2	48	2
	Acute Viral Hepatitis type C	10	12	305	0	325	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	5	0	6	0
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	1	0	7	0
	Haemophilus Influenza type b Infection	0	0	1	0	3	0
	Japanese Encephalitis	3	0	10	0	4	0
	Legionnaires' Disease	10	7	178	0	134	8
	Mumps	4	6	229	1	249	6
	Neonatal Tetanus	0	0	0	0	0	0
Pertussis	0	0	0	0	8	0	
Tetanus	0	0	2	0	6	0	
Category IV	Botulism	0	1	0	0	1	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	0	29	0	30	0
	Endemic Typhus Fever	0	1	21	0	9	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	1	1	0	548	6
	Invasive Pneumococcal Disease	1	2	144	0	154	0
	Leptospirosis	4	1	21	0	22	0
	Listeriosis	4	2	100	0	72	0
	Lyme Disease	0	0	0	0	0	0
	Melioidosis	0	0	8	0	8	1
	Q Fever	0	0	7	0	8	0
	Scrub Typhus	7	10	130	0	153	1
Toxoplasmosis	0	0	7	0	2	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	1	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
Severe Pneumonia with Novel Pathogens	229	2	14410	500	449	394	
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

- Four clusters related to tuberculosis (2) and diarrhea (2) were reported during week 27.

Imported Infectious Diseases

- There were 16 imported cases from 10 countries during week 27.

Diseases \ Countries	USA	Indonesia	Thailand	Czech Republic	Italian	Belgium	Turkey	Philippines	Saudi Arabia	Switzerland	Total
Severe Pneumonia with Novel Pathogens	3	3	2	2	1	1	1	1	1	1	16
Total	3	3	2	2	1	1	1	1	1	1	16

- During week 1-27, there were 544 imported cases from 55 countries. The top three countries are the Philippines (160), Indonesia (119), and India (50).
- During week 1-27, the three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (500), Amoebiasis (34), and Dengue Fever (5).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The epidemic is slow down gradually. The number of newly confirmed cases expected to be less than 50 per day and new cases with Delta variant should be aware.
- **Japanese Encephalitis** : Taiwan is in the midst of Japanese Encephalitis season. Individuals living in all counties/cities in Taiwan are at risk of infection.

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

Case diagnosis year		Week 28★		Week 1-28			
Classification	Disease Diagnosed	2021	2020	2021		2020	
				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	1	15	0	18	0
	Acute Viral Hepatitis type A	1	2	40	0	45	7
	Amoebiasis	2	6	105	34	130	76
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	1	1	3	3
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	1	5	5	61	61
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	0	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	7	0	8	0
	Malaria	0	0	1	1	1	1
	Measles	0	0	0	0	2	2
	Meningococcal Meningitis	0	0	2	0	5	0
	Paratyphoid Fever	0	0	2	0	0	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
Shigellosis	1	3	80	0	89	21	
Typhoid fever	0	0	1	0	5	3	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	0	0	0	2	2	
Category III	Acute Viral Hepatitis type B	2	3	81	2	51	2
	Acute Viral Hepatitis type C	17	18	322	0	343	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	5	0	6	0
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	1	0	7	0
	Haemophilus Influenza type b Infection	0	0	1	0	3	0
	Japanese Encephalitis	4	7	14	0	11	0
	Legionnaires' Disease	5	2	183	0	136	8
	Mumps	6	7	235	1	256	6
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	8	0
	Tetanus	0	0	2	0	6	0
Category IV	Botulism	0	0	0	0	1	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	1	0	30	0	30	0
	Endemic Typhus Fever	0	0	21	0	9	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	0	1	0	548	6
	Invasive Pneumococcal Disease	3	3	147	0	157	0
	Leptospirosis	1	2	22	0	24	0
	Listeriosis	8	6	108	0	78	0
	Lyme Disease	0	0	0	0	0	0
	Melioidosis	0	0	8	0	8	1
	Q Fever	0	1	7	0	9	0
	Scrub Typhus	3	27	133	0	180	1
Toxoplasmosis	0	0	7	0	2	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	1	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
Severe Pneumonia with Novel Pathogens	173	2	14582	527	451	396	
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

- Eleven clusters related to tuberculosis (9) and diarrhea (2) were reported during week 28.

Imported Infectious Diseases

- There were 27 imported cases from 12 countries during week 28.

Countries \ Diseases	Myanmar	Indonesia	USA	UAE	Philippines	UK	Saudi Arabia	Nigeria	Mauritania	Afghanistan	Japan	Switzerland	Total
Severe Pneumonia with Novel Pathogens	6	6	4	2	2	1	1	1	1	1	1	1	27
Total	6	6	4	2	2	1	1	1	1	1	1	1	27

- During week 1-28, there were 571 imported cases from 56 countries. The top three countries are the Philippines (162), Indonesia (125), and USA (54).
- During week 1-28, the three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (527), Amoebiasis (34), and Dengue Fever (5).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The epidemic has been in low level.
- **Japanese Encephalitis** : Taiwan is in the midst of Japanese Encephalitis season. Individuals living in all counties/cities in Taiwan are at risk of infection.

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