

Review of COVID-19 And Fungal Infections

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Abstract

The global pandemic of the novel coronavirus disease (COVID-19) has increased the number of patients suffering from acute respiratory distress syndrome (ARDS), as well as the risk of opportunistic fungal infections and secondary infections. This review article mainly discusses the increase in mucormycosis, aspergillosis, and candidiasis infections associated with COVID-19. The main reasons appeared to be the use of respirators, excessive use of steroids, and diabetes. COVID-19 patients with fungal infections had a high morbidity and fatality rate thus early diagnosis and treatment was pivotal. For patients with risk factors, a combination of serological and molecular diagnostic techniques and treatment with antifungal drugs are used to reduce the risk of severe illness and death caused by complicated diseases.

Keywords: COVID-19, SARS-CoV-2, mucormycosis, aspergillosis, candidiasis, invasive yeast infections

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week 16–17 (Apr. 17–Apr. 30, 2022)

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Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 16★		Week 1-16			
Classification	Disease Diagnosed	2022	2021	2022		2021	
				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	0	8	0	11	0
	Acute Viral Hepatitis type A	3	5	84	0	24	0
	Amoebiasis	5	5	63	12	72	33
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	1	0	0	5	5
	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 syndrome	0	0	0	0	4	0
	Malaria	1	0	2	2	1	1
	Measles	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	0	0	0	0
	Paratyphoid Fever	0	0	0	0	1	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
	Shigellosis	3	4	28	0	65	0
Typhoid fever	0	0	1	0	1	0	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	1	4	39	0	42	1
	Acute Viral Hepatitis type C	14	12	153	1	201	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	4	0	4	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	0	0	1	0
	Haemophilus Influenza type b Infection	0	0	1	0	1	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	3	5	108	0	104	0
	Mumps	1	8	71	0	149	1
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	0
Tetanus	0	0	1	0	2	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	4	10	0	18	0
	Endemic Typhus Fever	2	1	2	0	9	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	0	0	0	1	0
	Invasive Pneumococcal Disease	4	4	53	0	102	0
	Leptospirosis	1	0	12	0	11	0
	Listeriosis	3	6	39	0	56	0
	Lyme Disease	0	0	1	1	0	0
	Melioidosis	0	1	0	0	6	0
	Q Fever	0	0	2	0	0	0
	Scrub Typhus	2	4	37	0	58	0
Toxoplasmosis	0	1	11	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	21324	25	38605	7943	289	267	
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.

Suspected Clusters

- Nineteen clusters related to diarrhea (16), tuberculosis (2), upper respiratory tract infection (1) were reported during week 16.

Imported Infectious Diseases

- There were 679 imported cases from 25 countries during week 16.
Severe Pneumonia with Novel Pathogens: 678 cases from Vietnam 160, Indonesia 56, Turkey 20, Thailand 17, USA 14 and the remaining 20 countries have less than 10 cases.
Malaria: 1 case from Indonesia.
- During week 1-16, there were 7959 imported cases from 112 countries. The top three countries are Vietnam (1990), USA (1122), and Indonesia (1003).
- During week 1-16, the notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (7943).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens :** Taiwan is in the stage of widespread transmission of COVID-19, and it is expected that the number of cases increase rapidly. The epidemic of COVID-19 has decreased globally, but it is still critical. The risk of COVID-19 imported cases in Taiwan is persistence.

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

Case diagnosis year		Week 17★		Week 1-17			
Classification	Disease Diagnosed	2022	2021	2022		2021	
				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	0	8	0	11	0
	Acute Viral Hepatitis type A	4	1	88	0	25	0
	Amoebiasis	3	8	66	12	80	37
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	0	0	0	5	5
	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 syndrome	0	0	0	0	4	0
	Malaria	0	0	2	2	1	1
	Measles	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	0	0	0	0
	Paratyphoid Fever	0	0	0	0	1	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
Shigellosis	0	2	28	0	67	0	
Typhoid fever	0	0	1	0	1	0	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	0	9	39	0	51	2
	Acute Viral Hepatitis type C	7	8	160	1	209	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	2	0	6	0	4	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	0	0	1	0
	Haemophilus Influenza type b Infection	0	0	1	0	1	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	2	8	110	0	112	0
	Mumps	2	12	73	0	161	1
	Neonatal Tetanus	0	0	0	0	0	0
Pertussis	0	0	0	0	0	0	
Tetanus	0	0	1	0	2	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	4	10	0	18	0
	Endemic Typhus Fever	0	0	2	0	9	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	0	0	0	1	0
	Invasive Pneumococcal Disease	4	6	63	0	104	0
	Leptospirosis	2	2	14	0	13	0
	Listeriosis	2	6	41	0	62	0
	Lyme Disease	0	0	1	1	0	0
	Melioidosis	1	0	1	0	6	0
	Q Fever	0	5	2	0	5	0
	Scrub Typhus	4	3	41	0	61	0
Toxoplasmosis	0	0	11	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	77248	35	115847	8951	324	292	
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.

Suspected Clusters

- Twelve clusters related to diarrhea (7), tuberculosis (5) were reported during week 17.

Imported Infectious Diseases

- There were 1014 imported cases from 25 countries during week 17.
Severe Pneumonia with Novel Pathogens: 1014 cases from Vietnam 128, The Philippines 24, Indonesia 18, Thailand 16 and the remaining 21 countries have less than 10 cases.
- During week 1-17, there were 8967 imported cases from 114 countries. The top three countries are Vietnam (2117), USA (1351), and Indonesia (1021).
- During week 1-17, the notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (8951).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens :** Taiwan is in the stage of widespread transmission of COVID-19, and it is expected that the number of cases increase rapidly. The epidemic of COVID-19 has decreased globally, but it is still critical. The risk of COVID-19 imported cases in Taiwan is persistence.

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