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Original Article

Epidemic Status and Risk Assessment of Severe Fever with Thrombocytopenia Syndrome in Taiwan

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Abstract

Severe fever with thrombocytopenia syndrome (SFTS) is an emerging acute infectious disease. The SFTS virus (SFTSV) was first isolated from a case in Henan province, China, 2009. The epidemic countries were mainly China, Japan, and South Korea which lie close to Taiwan. Many hard tick species distributed in Taiwan could be SFTSV transmission vectors. The virus has been detected in domestic cattle and sheep, as well as their external parasites, *Rhipicephalus microplus*. SFTSV antibodies had also been detected in sheep. Moreover, we identified the first confirmed autochthonous case on November 4, 2019, and the virus strain is similar to those in Japan and South Korea. Based on the above, to realize the domestic epidemic risk and strategies for prevention and control, it is urgent to assess the impact of SFTS in Taiwan. We referred to the international risk assessment framework and collected information such as the risk of infection among compatriots, the possibility of a domestic epidemic, disease severity, and prevention and treatment strategies. The results showed that the risk of imported cases and epidemics in communities was low, but the risk of imported infected animals was possible. Even vectors could enter Taiwan through migratory birds. In addition, the fatality rate of SFTS was about 6–30%, which could pose a health impact on people. The comprehensive assessment determined that the risk of SFTS in the domestic epidemic was moderate. To protect the people, SFTS had been listed as Category IV Notifiable Infectious Diseases since April 15, 2020, and we would continue active surveillance and strengthen the monitoring of economic animals, wild animals, and

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vectors in high-risk areas. We also would improve the cognition and alertness of compatriots and medical institutions and implement measures such as protection and isolation during bleeding and intubation to avoid contagious infection. Such strategies could reduce the risk and impact of the domestic epidemic.

Keywords: SFTS, *Rhipicephalus microplus*, the first confirmed autochthonous case, risk assessment

week 5–week 6, 2023 (Jan.29, 2023–Feb.21, 2023)

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Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 5★		Week 1–5			
				2023		2022	
Classification	Disease Diagnosed	2023	2022	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	0	3	0	3	0
	Acute Viral Hepatitis type A	4	1	9	0	9	0
	Amoebiasis	0	1	26	7	22	5
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	0	0
	Cholera	0	0	0	0	0	0
	Dengue Fever	1	0	8	8	0	0
	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	0	0
	Malaria	0	0	1	1	0	0
	Measles	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	0	0	0	0
	Paratyphoid Fever	0	0	1	0	0	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
	Shigellosis	2	0	5	1	5	0
	Typhoid fever	0	0	0	0	0	0
	West Nile Fever	0	0	0	0	0	0
	Zika virus infection	0	0	0	0	0	0
	Monkeypox	0	-	0	0	-	-
Category III	Acute Viral Hepatitis type B	5	1	14	0	12	0
	Acute Viral Hepatitis type C	16	2	60	0	36	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	0	0	0	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	3	0	0	0
	Haemophilus Influenza type b Infection	0	0	0	0	0	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	7	2	31	0	36	0
	Mumps	5	5	26	0	23	0
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	0
	Tetanus	0	0	0	0	1	0
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	2	0	4	0	1	0
	Endemic Typhus Fever	1	0	1	0	0	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	11	0	17	0	0	0
	Invasive Pneumococcal Disease	12	2	31	0	13	0
	Leptospirosis	0	0	3	0	2	0
	Listeriosis	8	1	17	0	9	0
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	2	0	3	0	0	0
	Q Fever	1	0	1	0	1	0
	Scrub Typhus	4	1	19	0	11	0
	Toxoplasmosis	1	0	3	0	3	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 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	185610	404	796126	9699	2060	1466
	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, Gonorrhea, 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 2022/6/23, " Monkeypox " was listed as a Notifiable Infectious Disease.

Suspected Clusters

●Forty-one clusters related to diarrhea (34), tuberculosis (6) and upper respiratory tract infection (1) were reported during week 5.

Imported Infectious Diseases

●There were 1820 imported cases from at least 23 countries / areas during week 5.

Severe Pneumonia with Novel Pathogens：1819 cases from China (118), Japan (75), Korea (22), Singapore (20), Vietnam (15), Thailand (15), Malaysia (11), the Philippines (10), Hong Kong (8), USA (6), Austria (4), Turkey (4), France (4), Germany (3), Australia (3), UK (2), UAE (2), Indonesia (2), Canada (2), Brunei (1), Spain (1), Macau (1), Netherlands (1), and Unknown (1489).

Dengue Fever：1 case from Indonesia (1).

●During week 1–5, there were 9716 imported cases from at least 32 countries / areas. The top three countries are China (3096), Japan (278), Korea (71).

●During week 1–5, the notifiable diseases with the highest number of imported cases is Severe Pneumonia with Novel Pathogens (9699).

Summary of Epidemic

●**Severe Pneumonia with Novel Pathogens**：Due to the outpatient services have resumed after Lunar New Year Holiday, the influence of holiday effection on case notification could be reduced, the number of COVID-19 cases is expected to gradually decrease.

Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 6★		Week 1–6			
				2022		2021	
Classification	Disease Diagnosed	2023	2022	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	1	4	0	4	0
	Acute Viral Hepatitis type A	5	18	14	0	27	0
	Amoebiasis	7	3	33	8	25	5
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	0	0
	Cholera	0	0	0	0	0	0
	Dengue Fever	3	0	11	11	0	0
	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	1	0	1	0	0	0
	Malaria	0	0	1	1	0	0
	Measles	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	0	0	0	0
	Paratyphoid Fever	0	0	1	0	0	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
	Shigellosis	2	3	7	2	8	0
	Typhoid fever	0	0	0	0	0	0
	West Nile Fever	0	0	0	0	0	0
	Zika virus infection	0	0	0	0	0	0
	Monkeypox	0	-	**0**	**0**	-	-
Category III	Acute Viral Hepatitis type B	1	3	15	0	15	0
	Acute Viral Hepatitis type C	9	7	69	0	43	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	1	1	1	1	1	0
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	1	0	4	0	0	0
	Haemophilus Influenza type b Infection	0	0	0	0	0	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	5	10	36	0	46	0
	Mumps	4	2	30	0	25	0
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	0
	Tetanus	0	0	0	0	1	0
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	1	1	5	0	2	0
	Endemic Typhus Fever	0	0	1	0	0	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	3	0	20	0	0	0
	Invasive Pneumococcal Disease	6	4	37	0	17	0
	Leptospirosis	0	0	3	0	2	0
	Listeriosis	2	1	19	0	10	0
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	1	0	4	0	0	0
	Q Fever	0	1	1	0	2	0
	Scrub Typhus	2	3	21	0	14	0
	Toxoplasmosis	0	0	3	0	3	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 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	140274	421	936389	11543	2481	1774
	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, Gonorrhea, 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 2022/6/23, " Monkeypox " was listed as a Notifiable Infectious Disease.

Suspected Clusters

●Twenty-seven clusters related to diarrhea (22), and tuberculosis (5) were reported during week 6.

Imported Infectious Diseases

●There were 1850 imported cases from at least 23 countries / areas during week 6.

Severe Pneumonia with Novel Pathogens：1846 cases from Japan (86), China (33), Korea (21), Thailand (20), Vietnam (14), USA (9), Malaysia (9), Singapore (8), UK (7), the Philippines (6), Germany (5), Hong Kong (5), Indonesia (5), UAE (4), Turkey (4), Macau (3), Canada (2), New Zealand (2), Austria (2), Australia (2), Cambodia (2), Brunei (1), France (1),and Unknown (1595).

Dengue Fever：3 cases from Malaysia (2), Indonesia (1).

Acute Viral Hepatitis type E：1 case from China (1).

●During week 1–6, there were 11566 imported cases from at least 33 countries / areas. The top three countries are China (3130), Japan (362), Korea (92).

●During week 1–6, the notifiable diseases with the highest number of imported cases is Severe Pneumonia with Novel Pathogens (11543).

Summary of Epidemic

●**Severe Pneumonia with Novel Pathogens**：The number of COVID-19 cases gradually decrease, but the trend of COVID-19 with severe complications cases still needs to be observed. As schools start and cold surge influence, the epidemic could increase by close contacts between individuals.

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