

Surveillance of *Anaplasma phagocytophilum* Infections in Murines in Kinmen Area, 2014

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Abstract

The surveillance of *Anaplasma phagocytophilum* infections in wild murines was conducted on the main island of Kinmen in 6 field sites on May 19–21, 2014. Livers and spleens were obtained from 58 murines, including 39 *Rattus losea exiguus*, and 19 *Suncus murinus*, followed by DNA extraction and nested PCR. *A. phagocytophilum* DNA was detected in 10 out of 58 murines (17.2%), from liver in 6 rodents, from spleen in 7 rodents, and from both liver and spleen in 3 rodents. In terms of geographic distribution, murines captured from 5 out of 6 field sites were positive for *A. phagocytophilum* DNA, suggesting that *A. phagocytophilum* could be widely present in wilderness areas of Kinmen. *A. phagocytophilum* was the pathogen of human granulocytic ehrlichioses transmitted by ticks. Therefore, when a patient who develops fever of unknown origin after tick bites is recognized in these areas, our results can be used as a reference for diagnosis.

Keywords: *Anaplasma phagocytophilum*; *Rattus losea exiguus*; Nested PCR; Liver; Spleen

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Epidemiological Investigation of Hantavirus in Rodents at International Ports in Taiwan, 2010-2013

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Abstract

Hantavirus is a category II notifiable disease in Taiwan. The aim of this study is to investigate the rodent population, distribution, and seropositive rate of Hantavirus in its rodent vector. During the period from Jan 1, 2010 to Dec 31, 2013, a total of 3,088 rodents, which can be categorized into 6 species in 4 genera, 2 families, and 2 orders have been captured at international ports in Taiwan. The dominate species of the captured rodents were the species of *Rattus norvegicus*, followed by, in percentage descending order, *Suncus murinus*, *Rattus losea*, *Rattus tanezumi*, *Bandicota indica* and *Mus musculus*. The number of rodents captured were not differ greatly by year, indicated that the rodents now reached to a stable population in ports area. The detected Hantavirus seropositive rate was highest in *R. norvegicus* (11.52%), followed by *R. tanezumi* (2.60%), *S. murinus* (1.01%), and *R. losea* (0.25%). The average Hantavirus seropositive rate in rodents captured at international ports during Jan 2010 to Dec 2013 was 6.02 % (0.00%–36.55%), except none detected in two ports (Taipei seaport and Hualien seaport). Although we have been monitoring the infection of hantavirus in rodents at international ports during the period from Nov 2004 to Dec 2013, but the hantavirus seropositive rate in rodent population was still presented at a certain level. The risk of human infection by hantavirus when in contact with excreta or secretions from infected rodents is high. We suggested that the authorities at international ports should strengthen port sanitation control and decrease density of rodent population in ports area, and focus on rodent elimination by drug, thus reduce the chance of contact between human and rodents, furthermore reduce the risk of human infection.

Keywords: International ports; Rodent host; Hantavirus; Ports sanitation

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First Report of An Infant Intestinal Botulism Case in A Recent Decade in Taiwan

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Abstract

On 20th January 2015, a 5-month-old girl was notified, and later known as a laboratory-confirmed infant botulism in a medical center in Tainan. It is the first report of an infant intestinal botulism patient in Taiwan in the recent decade. As the tests to the five suspicious food samples were all negative, the source of infection remains uncertain. There are a number of experiences to be shared from the investigation: 1. Blood draws in infants are limited so that it would have taken more than once to collect blood samples from an infant for Botulism tests; 2. Since only Equine Botulinum Antitoxin is available in Taiwan, clinicians should balance between potential risk of hypersensitivity and therapeutic outcome. Accordingly, the workbook provided by Taiwan CDC on prevention and control of infant botulism might need to be amended; 3. In order to collect epidemiological data, it is very important to support family members psychologically, as they feel sorry and guilty for the incidence.

Keywords: *Clostridium botulinum* ; Botulinum Antitoxin ; Infant intestinal botulism

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

Case diagnosis week		Week 27		Week 1—27	
Classification	Disease Diagnosed ¹	2015	2014	2015	2014
Category I	Plague	0	0	0	0
	Rabies	0	0	0	0
	SARS	0	0	0	0
	Smallpox	0	0	0	0
Category II	Acute Flaccid Paralysis	0	3	10	17
	Acute Viral Hepatitis type A	1	1	45	64
	Amoebiasis	6	11	185	131
	Anthrax	0	0	0	0
	Chikungunya Fever	0	0	3	6
	Cholera	0	0	4	3
	Dengue Fever	20	50	318	253
	Diphtheria	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0
	Epidemic Typhus Fever	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	0	1
	Malaria	2	0	6	8
	Measles	0	0	25	17
	Meningococcal Meningitis	0	0	2	3
	Paratyphoid Fever	0	0	1	6
	Poliomyelitis	0	0	0	0
	Rubella	0	1	6	5
	Shigellosis	1	1	94	83
	Typhoid fever	0	1	17	13
West Nile Fever	0	0	0	0	
Category III	Acute Viral Hepatitis type B	0	5	61	54
	Acute Viral Hepatitis type C ⁴	4	3	108	89
	Acute Viral Hepatitis type D	0	0	1	0
	Acute Viral Hepatitis type E	0	0	1	8
	Acute Viral Hepatitis untype	0	0	1	3
	Congenital Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	3	5
	Haemophilus Influenza type b Infection	0	0	1	2
	Japanese Encephalitis	4	1	18	7
	Legionellosis	4	2	79	65
	Mumps ²	10	17	418	457
	Neonatal Tetanus	0	0	0	0
	Pertussis	1	0	55	23
	Tetanus ²	0	0	5	2
	Category IV	Botulism	0	0	1
Brucellosis		0	0	0	0
Complicated Influenza		27	15	686	1646
Complicated Varicella ³		0	0	31	34
Endemic Typhus Fever		4	0	16	14
Herpesvirus B Infection		0	0	0	0
Invasive Pneumococcal Disease		9	6	311	357
Leptospirosis		0	2	23	24
Lyme Disease		0	0	0	0
Melioidosis		0	1	13	11
Q Fever		0	0	21	31
Scrub Typhus		21	17	144	162
Toxoplasmosis		0	0	6	7
Tularremia	0	0	0	0	
Category V	Ebola Virus Disease	0	0	0	0
	Ebola-Marburg Hemorrhagic Fever	0	0	0	0
	Novel Influenza A Virus Infections ⁵	0	0	0	0
	Lassa Fever	0	0	0	0
	Rift Valley Fever	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus	0	0	0	0
Yellow Fever	0	0	0	0	

1. The following 8 chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhoea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.
2. Reported cases.
3. Since 2014/1/1, "Varicella" was modified to "Complicated Varicella".
4. Since 2014/3/6, the case definition for confirmed Acute hepatitis C was changed from "meet the clinical **and** laboratory conditions" to "meet the clinical **or** laboratory conditions".
5. Since 2014/7/1, various subtypes of human cases of avian influenza are reported as "novel influenza A virus infections", a Category V Notifiable Infectious Disease. The original "H5N1 flu" and "H7N9 flu", which were respectively listed as a Category I Notifiable Infectious Disease and a Category V Notifiable Infectious Disease were removed from the list on the same day.

Suspected Clusters

- Fourteen clusters were reported, including 6 diarrhea clusters, 5 upper respiratory tract infection clusters, 2 influenza-like illness clusters, and 1 measles cluster.

Imported Infectious Diseases

- 18 confirmed cases were imported from 7 countries during Week 27 of 2015.

Country \ Disease	Indonesia	China	Philippines	Myanmar	India	Thailand	Singapore	Total
Dengue Fever	2			1		2	1	6
Amoebiasis	3		2	1				6
Malaria					2			2
Hepatitis A		2						2
Hepatitis C		1						1
Shigellosis	1							1
Total	6	3	2	2	2	2	1	18

Note: The statistics listed in this table include imported cases that were either confirmed or updated^{*} in the previous week.

- A total of 337 confirmed cases were imported from 26 countries in 2015.
- Top 3 imported diseases : Dengue fever (118), Amoebiasis (112), Shigellosis (51).
- Top 3 countries responsible for most imported cases : Indonesia (213), Philippines (20), Malaysia (17).

Summary of Epidemic

- **Dengue Fever** : The epidemic has increased in southern Taiwan. New cases of dengue have continued to grow in North District and Annan District, Taiwan City. In some cases, the interval between seeking medical treatment for the first time and the date of reporting is comparatively longer. Doctors are advised to stay vigilant for suspected cases to ensure timely case reporting. On top of that, heavy rain has resulted in an increased number of water-filled containers after typhoon attacked and elevated the risk of an epidemic outbreak. The public is urged to clean up and remove breeding sites.
- **Enterovirus** : The enterovirus activity continued to peak. During Week 27, the consultation rate and numbers of visits to ER for enterovirus infection have not fluctuated. The epidemic has increased in southern Taiwan. Coxsackie A16 virus is currently the dominant strain circulating in the community. So far, a total of 4 cases of severe enterovirus infection have been confirmed. Of these cases, two died. The epidemic is expected to gradually slow down for the upcoming summer vacation.
- **Japanese Encephalitis** : Japanese encephalitis activity has peaked. Thus far this year, a total of 19 cases of Japanese encephalitis have been confirmed. Most cases were reported in southern Taiwan. Taiwan CDC urges the public to take personal precautions against mosquito bites and parents are reminded to make sure their children receive the vaccine timely.

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

Case diagnosis week		Week 28		Week 1—28	
Classification	Disease Diagnosed ¹	2015	2014	2015	2014
Category I	Plague	0	0	0	0
	Rabies	0	0	0	0
	SARS	0	0	0	0
	Smallpox	0	0	0	0
Category II	Acute Flaccid Paralysis	0	3	10	20
	Acute Viral Hepatitis type A	2	2	47	66
	Amoebiasis	5	5	190	136
	Anthrax	0	0	0	0
	Chikungunya Fever	1	0	4	6
	Cholera	0	0	4	3
	Dengue Fever	40	54	358	307
	Diphtheria	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0
	Epidemic Typhus Fever	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	0	1
	Malaria	0	1	6	9
	Measles	2	0	27	17
	Meningococcal Meningitis	0	0	2	3
	Paratyphoid Fever	0	0	1	6
	Poliomyelitis	0	0	0	0
	Rubella	0	0	6	5
Shigellosis	1	2	95	85	
Typhoid fever	0	0	17	13	
West Nile Fever	0	0	0	0	
Category III	Acute Viral Hepatitis type B	2	4	63	58
	Acute Viral Hepatitis type C ⁴	7	2	115	91
	Acute Viral Hepatitis type D	0	0	1	0
	Acute Viral Hepatitis type E	0	0	1	8
	Acute Viral Hepatitis untype	1	0	2	3
	Congenital Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	1	1	4	6
	Haemophilus Influenza type b Infection	0	0	1	2
	Japanese Encephalitis	2	2	20	9
	Legionellosis	10	4	89	69
	Mumps ²	10	22	428	479
	Neonatal Tetanus	0	0	0	0
	Pertussis	0	1	55	24
	Tetanus ²	1	0	6	2
Category IV	Botulism	1	0	2	0
	Brucellosis	0	0	0	0
	Complicated Influenza	21	8	707	1654
	Complicated Varicella ³	1	1	32	35
	Endemic Typhus Fever	0	0	16	14
	Herpesvirus B Infection	0	0	0	0
	Invasive Pneumococcal Disease	9	15	320	372
	Leptospirosis	4	3	27	27
	Lyme Disease	0	0	0	0
	Melioidosis	3	0	16	11
	Q Fever	2	3	23	34
	Scrub Typhus	15	23	159	185
	Toxoplasmosis	0	0	6	7
Tularremia	0	0	0	0	
Category V	Ebola Virus Disease	0	0	0	0
	Ebola-Marburg Hemorrhagic Fever	0	0	0	0
	Novel Influenza A Virus Infections ⁵	0	0	0	0
	Lassa Fever	0	0	0	0
	Rift Valley Fever	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus	0	0	0	0
Yellow Fever	0	0	0	0	

1. The following 8 chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.
2. Reported cases.
3. Since 2014/1/1, "Varicella" was modified to "Complicated Varicella".
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5. Since 2014/7/1, various subtypes of human cases of avian influenza are reported as "novel influenza A virus infections", a Category V Notifiable Infectious Disease. The original "H5N1 flu" and "H7N9 flu", which were respectively listed as a Category I Notifiable Infectious Disease and a Category V Notifiable Infectious Disease were removed from the list on the same day.

Suspected Clusters

- Sixteen clusters were reported, including 5 tuberculosis clusters, 4 diarrhea clusters, 3 upper respiratory tract infection clusters, 3 influenza-like illness clusters, and 1 varicella cluster.

Imported Infectious Diseases

- 18 confirmed cases were imported from 7 countries during Week 25 of 2015.

Country Disease	Indonesia	Myanmar	China	Vietnam	Hong Kong	Thailand	Philippines	Total
	Dengue Fever	1	3		1		1	
Amoebiasis	4							4
Measles			2					2
Hepatitis A				1	1			2
Shigellosis	1			1				2
Typhoid fever							1	1
Chikungunya Fever	1							1
Total	7	3	2	3	1	1	1	18

Note: The statistics listed in this table include imported cases that were either confirmed or updated* in the previous week.

- A total of 354 confirmed cases were imported from 26 countries in 2015.
- Top 3 imported diseases : Dengue fever (124), Amoebiasis (116), Shigellosis (53).
- Top 3 countries responsible for most imported cases : Indonesia (219), Philippines (21), China (19).

Summary of Epidemic

- **Dengue Fever** : New cases of dengue have continued to occur in North District and Annan District, Tainan City. In addition, new cases have been confirmed in Rende District, Tainan City and new sporadic cases have been confirmed in Nanzih District, Zuoying District, Jenwu District and Gushan District, Kaohsiung City. On top of that, the epidemic has increased rapidly in southern Taiwan. Heavy rain has resulted in an increased number of water-filled containers recently and elevated the risk of an epidemic outbreak. The public is urged to clean up and remove breeding sites.
- **Enterovirus** : The enterovirus activity continued to peak. The epidemic is expected to gradually slow down for the summer vacation. During Week 28, the consultation rate and numbers of visits to ER for enterovirus infection have decreased. Coxsackie A16 virus is currently the dominant strain circulating in the community. So far, a total of 4 cases of severe enterovirus infection have been confirmed. Of these cases, two died.

- **Japanese Encephalitis** : Thus far this year, a total of 21 cases of Japanese encephalitis have been confirmed. Most cases were reported in southern Taiwan. According to the epidemiological investigation, most cases live near or work adjacent to pig farms, rice fields and ditches.

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