

The Prevalence of Children Head Lice Infestation in a Rural Town in Nantou County, 2014

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Abstract

Head lice infestation remains a significant public health issue in the rural areas in Taiwan. Epidemiology of children head lice infestation in the rural area in central Taiwan has not been updated in the past decade. We reported the results of an epidemiological investigation to elucidate the prevalence, prevention and control of children head lice infestation in a rural town in Nantou.

Students in the elementary schools and kindergartens in the rural town were enrolled. School nurses inspected the enrolled students to examine the head lice infestation in February and March, 2014. The Health Bureau of Nantou County Government provided topical ointments to the infested children and their family to treat the head lice infestation.

Of the 894 elementary school students, 239 (26.7%) were head lice infested. Fifty three (12.2%) of 434 male students and 186 (40.4%) of 460 female students were positive for head lice infestation, respectively. Of the 438 kindergarten students, 90 (20.5%) were head lice infested. Twenty eight (11.2%) of 249 male students and 62 (32.8%) of 189 female students were positive for head lice infestation, respectively. The infestation rates among female students were significantly higher than those among male students ($p < 0.001$). The infestation rate among kindergarten students was significantly lower than that among primary school students ($p = 0.01$).

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Received: Sep. 22, 2015

Accepted: Jun. 23, 2016

DOI: 10.6525/TEB.20170214.33(3).001

Our report shows head lice infestation remained prevalent among school children in the rural town. Providing necessary resources is essential to mitigate the health impact of head lice infestation among the children.

Keywords: Head louse, Nantou, Rural area

The Technique of Positive-Control Cell Block in Infectious Disease Pathology

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Abstract

Currently, pathogens can be detected by molecular biological techniques in blood or tissue samples. However, in microbial forensics, the results of microbiological test cannot be used for final diagnosis for cause of death. Pathological picture must be compared with the microbiological results to determine the cause and mechanism of death. We have developed and utilized infectious disease molecular pathology on tissue level for direct proving microbial pathogenesis. The pathologic diagnosis was made by immunohistochemistry, *in situ* hybridization and immunofluorescence. In this article, we prepared biological material into cell blocks as positive control, and further demonstrated by hematoxylin-eosin stain and immunohistochemistry. The technique of positive-control cell blocks in infectious disease pathology offers pathologists to make a pathological diagnosis of an emerging infectious disease (such as MERS and Zika virus infections) or other fatal infectious diseases (such as SARS, Ebola and Influenza virus infections). It is the very first step in the development of infectious disease pathology activities in Taiwan.

Keywords: Microbial forensics, Infectious disease pathology, Positive control, Cell block, Immunohistochemistry

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Received: Apr. 26, 2016

Accepted: Jul. 25, 2016

DOI: 10.6525/TEB.20170214.33(3).002

week 3–5(Jan. 15–Feb. 4, 2017)

DOI: 10.6525/TEB.20170214.33(3).003

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

Case diagnosis week		Week 3		Week 1–3	
Classification	Disease Diagnosed ¹	2017	2016	2017	2016
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	2	0	2	1
	Acute Viral Hepatitis type A	19	5	46	14
	Amoebiasis	2	4	19	14
	Anthrax	0	0	0	0
	Chikungunya Fever	0	0	0	1
	Cholera	0	0	0	0
	Dengue Fever	7	74	20	395
	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	1	0
	Malaria	0	0	0	2
	Measles	0	0	0	0
	Meningococcal Meningitis	0	0	0	0
	Paratyphoid Fever	0	0	1	0
	Poliomyelitis	0	0	0	0
	Rubella	0	0	0	0
	Shigellosis	4	2	16	8
Typhoid fever	1	1	2	1	
West Nile Fever	0	0	0	0	
Category III	Acute Viral Hepatitis type B	2	1	14	4
	Acute Viral Hepatitis type C ⁵	4	1	12	8
	Acute Viral Hepatitis type D	0	0	1	0
	Acute Viral Hepatitis type E	0	0	1	3
	Acute Viral Hepatitis untype	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	0	1
	Haemophilus Influenza type b Infection	0	0	0	0
	Japanese Encephalitis	0	0	0	0
	Legionellosis	2	6	5	8
	Mumps ²	11	12	36	42
	Neonatal Tetanus	0	0	0	0
	Pertussis	0	0	0	1
	Tetanus ²	0	0	1	0
Category IV	Botulism	0	0	0	0
	Brucellosis	0	0	0	0
	Complicated Influenza	11	34	38	73
	Complicated Varicella ⁴	0	5	0	5
	Endemic Typhus Fever	0	0	0	2
	Herpesvirus B Infection	0	0	0	0
	Invasive Pneumococcal Disease	15	20	38	45
	Leptospirosis	2	0	9	1
	Lyme Disease	0	0	0	0
	Melioidosis	1	0	1	0
	Q Fever	0	0	1	0
	Scrub Typhus	9	14	23	38
Toxoplasmosis	0	1	0	1	
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 ⁶	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.
6. Since 2016/1/22, "Zika Virus Infection" was listed as a Notifiable Infectious Disease.

Suspected Clusters

- Twenty-seven clusters were reported, including 19 diarrhea clusters, 3 tuberculosis clusters, 3 varicella clusters, 1 upper respiratory tract infection cluster, and 1 influenza-like illness cluster.

Imported Infectious Diseases

- 18 confirmed cases were imported from 6 countries during Week 3 of 2017.

Country Disease	Indonesia	China	Vietnam	Myanmar	Thailand	Maldives	Total
Dengue Fever	4		2		1	1	8
Amoebiasis	4						4
Shigellosis	1						1
Hepatitis B		1					1
Hepatitis A		1					1
Typhoid fever				1			1
Legionellosis		1					1
Hepatitis E		1					1
Total	9	4	2	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 46 confirmed cases were imported from 10 countries in 2017.
- Top 3 imported diseases : Dengue fever (17), Amoebiasis (11), Shigellosis (6).
- Top 3 countries responsible for most imported cases : Indonesia (21), Vietnam (6), Thailand (5).

Summary of Epidemic

- **Diarrhea** : As the viral gastroenteritis season is upon us, the epidemic is expected to gradually increase during the Chinese Lunar New Year holiday.
- **Influenza** : Since the northeast monsoon has become prevalent, the recent temperature has dropped. During the following week, which coincided with the Chinese Lunar New Year holiday, influenza activity is expected to gradually increase. H3N2 is currently the dominant strain circulating in the community.
- **Zika Virus Infection** : As the epidemic in affected areas has continued to increase, the risk of importing Zika virus into Taiwan from those countries remains elevated.

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

Classification	Case diagnosis week Disease Diagnosed ¹	Week 4		Week 1–4	
		2017	2016	2017	2016
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	2	0	4	1
	Acute Viral Hepatitis type A	16	13	62	27
	Amoebiasis	11	7	30	21
	Anthrax	0	0	0	0
	Chikungunya Fever	0	1	0	2
	Cholera	0	0	0	0
	Dengue Fever	4	31	24	426
	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	1	0
	Malaria	0	0	0	2
	Measles	0	0	0	0
	Meningococcal Meningitis	0	0	0	0
	Paratyphoid Fever	0	0	1	0
	Poliomyelitis	0	0	0	0
	Rubella	0	1	0	1
	Shigellosis	2	3	18	11
	Typhoid fever	0	0	2	1
West Nile Fever	0	0	0	0	
Category III	Acute Viral Hepatitis type B	3	0	17	4
	Acute Viral Hepatitis type C ⁵	4	3	16	11
	Acute Viral Hepatitis type D	0	0	1	0
	Acute Viral Hepatitis type E	2	0	3	3
	Acute Viral Hepatitis untype	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	0	1
	Haemophilus Influenza type b Infection	0	0	0	0
	Japanese Encephalitis	0	0	0	0
	Legionellosis	1	1	6	9
	Mumps ²	13	10	49	52
	Neonatal Tetanus	0	0	0	0
	Pertussis	0	0	0	1
	Tetanus ²	1	0	2	0
Category IV	Botulism	0	0	0	0
	Brucellosis	0	0	0	0
	Complicated Influenza	7	47	45	120
	Complicated Varicella ⁴	1	0	1	5
	Endemic Typhus Fever	0	0	0	2
	Herpesvirus B Infection	0	0	0	0
	Invasive Pneumococcal Disease	11	16	49	61
	Leptospirosis	2	2	11	3
	Lyme Disease	0	0	0	0
	Melioidosis	2	0	3	0
	Q Fever	0	2	1	2
	Scrub Typhus	2	19	25	57
	Toxoplasmosis	0	0	0	1
Tularemia	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 ⁶	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.
6. Since 2016/1/22, "Zika Virus Infection" was listed as a Notifiable Infectious Disease.

Suspected Clusters

- Eight clusters were reported, including 4 diarrhea clusters, 3 upper respiratory tract infection clusters and 1 varicella cluster.

Imported Infectious Diseases

- 13 confirmed cases were imported from 10 countries during Week 4 of 2017.

Country Disease	Indonesia	Bangladesh	Cambodia	Malaysia	Philippines	Singapore	Myanmar	Maldives	China	Marshall	Total
	Amoebiasis	4					1	1			
Dengue Fever		1	1							1	3
Hepatitis A				1	1				1		3
Shigellosis								1			1
Total	4	1	1	1	1	1	1	1	1	1	13

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

- A total of 59 confirmed cases were imported from 13 countries in 2017.
- Top 3 imported diseases : Dengue fever (24), Amoebiasis (17), Shigellosis (7).
- Top 3 countries responsible for most imported cases : Indonesia (25), Vietnam (6), Thailand (5).

Summary of Epidemic

- **Diarrhea** : As the viral gastroenteritis season is upon us, the epidemic is expected to gradually increase during the Chinese Lunar New Year holiday.
- **Influenza** : During the Chinese Lunar New Year holiday, influenza activity is expected to gradually increase.
- **Zika Virus Infection** : As the epidemic in affected areas has continued to increase, the risk of importing Zika virus into Taiwan from those countries remains elevated.

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

Case diagnosis week		Week 5		Week 1–5	
Classification	Disease Diagnosed ¹	2017	2016	2017	2016
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	4	4	5
	Acute Viral Hepatitis type A	8	10	70	37
	Amoebiasis	0	8	30	29
	Anthrax	0	0	0	0
	Chikungunya Fever	0	0	0	2
	Cholera	0	0	0	0
	Dengue Fever	9	31	33	457
	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	1	0
	Malaria	0	1	0	3
	Measles	0	0	0	0
	Meningococcal Meningitis	1	0	1	0
	Paratyphoid Fever	0	0	1	0
	Poliomyelitis	0	0	0	0
	Rubella	0	0	0	1
	Shigellosis	1	2	19	13
Typhoid fever	0	0	2	1	
West Nile Fever	0	0	0	0	
Category III	Acute Viral Hepatitis type B	3	2	20	6
	Acute Viral Hepatitis type C ⁵	1	2	17	13
	Acute Viral Hepatitis type D	0	0	1	0
	Acute Viral Hepatitis type E	0	1	3	4
	Acute Viral Hepatitis untype	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	0	1
	Haemophilus Influenza type b Infection	0	0	0	0
	Japanese Encephalitis	0	0	0	0
	Legionellosis	1	8	7	17
	Mumps ²	10	9	59	61
	Neonatal Tetanus	0	0	0	0
	Pertussis	0	0	0	1
	Tetanus ²	0	1	2	1
Category IV	Botulism	0	0	0	0
	Brucellosis	0	0	0	0
	Complicated Influenza	8	115	53	235
	Complicated Varicella ⁴	0	0	1	5
	Endemic Typhus Fever	0	0	0	2
	Herpesvirus B Infection	0	0	0	0
	Invasive Pneumococcal Disease	10	14	59	75
	Leptospirosis	0	1	11	4
	Lyme Disease	0	0	0	0
	Melioidosis	0	0	3	0
	Q Fever	0	1	1	3
	Scrub Typhus	3	6	28	63
	Toxoplasmosis	0	0	0	1
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 ⁶	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".
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6. Since 2016/1/22, "Zika Virus Infection" was listed as a Notifiable Infectious Disease.

Suspected Clusters

- Eighteen clusters were reported, including 10 diarrhea clusters, 4 tuberculosis clusters and 4 upper respiratory tract infection clusters.

Imported Infectious Diseases

- 10 confirmed cases were imported from 5 countries during Week 5 of 2017.

Disease \ Country	Indonesia	China	Vietnam	Myanmar	Thailand	Total
Dengue Fever	1	2	2	4		9
IPD					1	1
Total	1	2	2	4	1	10

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

- A total of 69 confirmed cases were imported from 13 countries in 2017.
- Top 3 imported diseases : Dengue fever (33), Amoebiasis (17), Shigellosis (7).
- Top 3 countries responsible for most imported cases : Indonesia (25), Vietnam (10), Philippines (7).

Summary of Epidemic

- **Diarrhea** : As the viral gastroenteritis season is upon us and there are many spring party activities recently, the risk of clustered cases remain.
- **Influenza** : As a strong continental cold air mass will arrive on Thursday, influenza activity is expected to increase to slightly higher than that before the Chinese Lunar New Year holiday. H3N2 is currently the dominant strain circulating in the community.
- **Zika Virus Infection** : As the epidemic in affected areas has continued to increase, the risk of importing Zika virus into Taiwan from those countries remains elevated.

The Taiwan Epidemiology Bulletin series of publications is published by Centers for Disease Control, Ministry of Health and Welfare, Taiwan (R.O.C.) since Dec 15, 1984.

Publisher: Jih-Haw Chou

Editor-in-Chief: Yung-Ching Lin

Executive Editor: Hsueh-Ju Chen, Hsin-Lun Lee, Hsiu-Lan Liu

Address: No.6, Linsen S. Rd., Jhongjheng District, Taipei City 10050, Taiwan (R.O.C.)

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Suggested Citation:

[Author].[Article title].Taiwan Epidemiol Bull 2017;33:[inclusive page numbers].[DOI]