

An Investigation of a Cluster Infection of Head Lice at an Elementary School in Taipei City

Yan- Lin Chang¹, Chun-Yi Chung², Pzu-Ting Kao^{1,3},
Hsu Yun-Hsia^{1,3}, Chuang Peing^{3*}

1. Song Shan District Health Center, Taipei City
2. Health Center of Sansia Township of Taipei County
3. Taipei City Hospital

From Chinese version, pp,030-036

Abstract

On hearing the term “head lice”, one can not help feeling itchy on the scalp. According to stereotypes, it should be found in an environment of poor public health. In recent months, cluster infections of head lice happened sequentially among school children in several elementary schools of Taipei City. These events deserved our concern and attention. A cluster infection event of head lice happened in an elementary school of Taipei City in May 2006. Then an epidemiologic investigation was done immediately. The purpose of the investigation was evaluation of the infection scale, route of the infection, source of the infection and effectiveness of the preventive measures. Three hundred and twenty-five school children and six school faculties were investigated. There were 14

- Received : March 20, 2008
- Accepted : May 1, 2008
- Correspondence : Chuang Peing
- Address : 7F, NO.100, Kuenming St. Taipei City, 10844, Taiwan, R.O.C
- e-mail: ymhpc@health.gov.tw



cases confirmed by laboratory examinations, and they were all school children. The overall attack rate was 4.22% (14/331). The preventive measures and medication were taken since May 25. No more newly found cases of head lice were noted since June 16. Follow-up of the infection was then concluded on June 30.

Introduction

Blood-sucking by head lice would cause patients scalp numbness, insomnia and even some infectious diseases. [1] From the beginning of 2006, many students and parents were worried and panicked by media reports of events of head lice infection of school children in Taipei City. And they all wondered why they got infected since they all had good personal hygiene habits. Taiwan spans across tropical and subtropical areas where high temperature and high humidity last all year long. Generally speaking, people in Taiwan have good habit of bathing, but people in some areas still get infection of head lice.

Among the infected people, the highest infection rate is seen in the population of elementary school children. [2] Head lice attack mainly children and their family. About one million school children get head lice infection every year. Peak of infection is seen in children aged 5 to 11. [3] The Centers for Disease Control (CDC) was informed on May 24, 2006, by a health center that at an elementary school in Taipei City, several school children were suspected of having head lice infection. In response, CDC sent experts to the school for an investigation of associated infections and epidemiologic study. The purpose of the investigation was to establish the infection scale and route of infection as well as to help

implement measures that would prevent the spread of the infection.

Materials and Methods

Subjects : This investigation was aimed at those who were suspected of infection on May 24, 2006, at an elementary school in Taipei City and those who had close contact with those suspected cases. Three hundred and twenty-five school children and six faculties, 13 classes in total, were enrolled for the study.

Case definition : Suspected cases were those suspected of infection after a preliminary examination by the school nurse and then screened as positive by a CDC infection investigator.

Case confirmation : The specimen taken from a suspected case would be sent to the laboratory at CDC's Center for Research and Diagnostics. If the laboratory diagnosis turned out positive, the case would become a confirmed case.

Laboratory examination : The laboratory at CDC's Center for Research and Diagnostics would administer a microscopic examination.

As told by the school nurse on May 24 that the index case was a school girl of class 15, Grade 6, who complained of head itching to her class teacher. Three suspected cases were then screened out via a preliminary examination by the school nurse. An infection investigation aimed at the three suspected cases were then performed to understand the situation, including their attendance at the after-school classes and cram schools. The scale of the investigation was also enlarged to cover their



siblings in the same school. The overall screening and infection investigation covered the classes their siblings attended and people with whom their siblings had possible contact. Then the specimens of worm eggs taken from the suspected cases were sent to the laboratory at CDC's Center for Research and Diagnostics. The preventive medicine, Delice, was given to the suspected cases and their family. The prescription of the medication was one pack for the infected school children and two packs for their parents. Evaluation of the effectiveness of medications would be done after follow-up for one week. To avoid further spread of the infection, the entire class should be examined at the same time if there was a single suspected case in the class. On May 25, screening was performed on the siblings of the suspected cases who were screened out the previous day and the possible contacts of their siblings. If one suspected case was noted, the entire class would be examined at the same time. In total, 10 suspected cases were screened out. One newly found school child was noted on June 1, while two newly found and one newly found school children were noted on June 8 and on June 15, respectively.

To sum up, there were 17 suspected cases from May 24 to June 15. Among them, 14 were confirmed cases and they were all school children. The overall attack rate was 4.22%

(14/331). In these 14 patients, females accounted for 92.8% (13/14) and males constituted 7.14% (1/14). Most of them were siblings or classmates. (Fig.1)

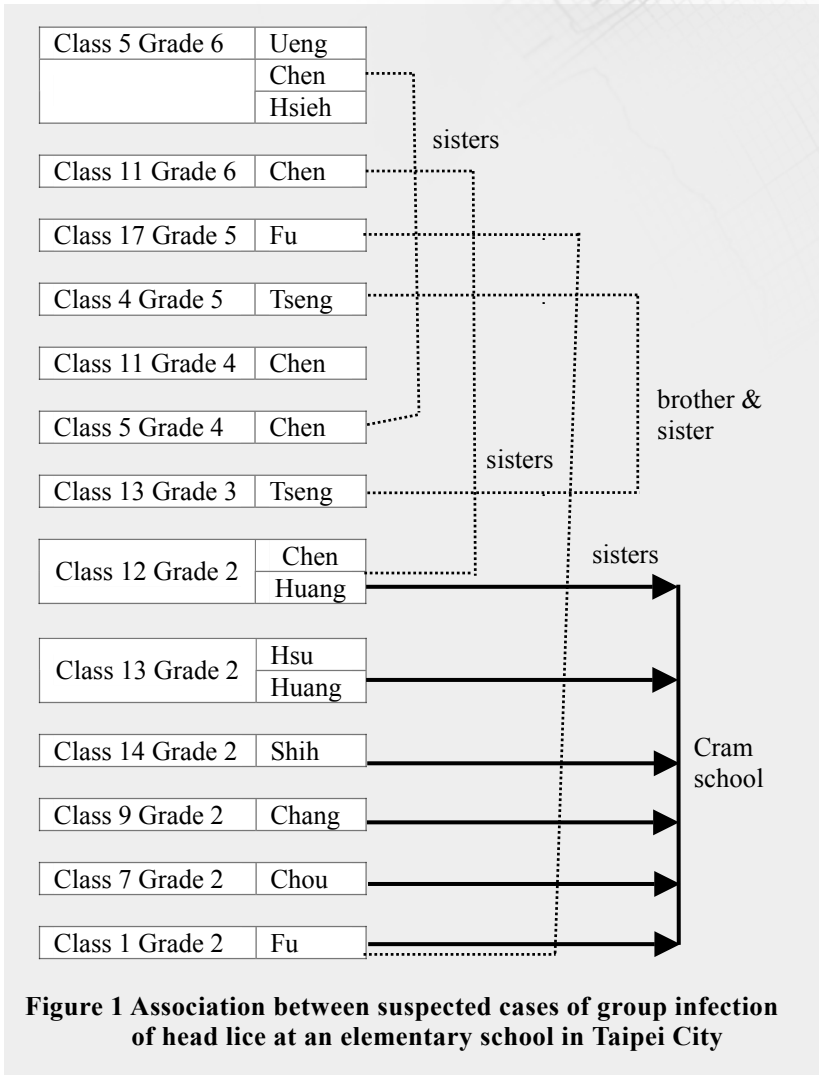


Figure 1 Association between suspected cases of group infection of head lice at an elementary school in Taipei City



Route of Infection and Hypothesis

Among the 14 patients, most of the senior class school children were siblings or classmates with one another, while most of the junior class school children joined the after-school classes held by the school. During their school hours, they could get head lice infection via group activities, playing and exercise. In addition, some of the patients were classmates and some were siblings. Siblings could get infected via using the same pillows, beds, towels and combs.

Specimen Collection and Laboratory Examination

The specimens of worm eggs taken from the 17 patients were sent to the laboratory at CDC's Center for Research and Diagnostics. Fourteen were confirmed as worm eggs. Therefore it could be confirmed that an outbreak had taken place at this school.

Preventive Measures

Head lice could infect the victims through direct contact. [4] Due to close contact between school children and rapid spread of the disease, the following suggestions were made:

1. Follow up the patients continuously and report back the results: Whether there is (are) new patient(s) or not in all grades or after-school classes should be confirmed. In addition, phone calls should be made to the institutes outside the school like cram schools, talent training classes or after-school classes attended by any of the 14 patients to remind them the importance of preventing head lice infection so that the scale of the

infection could be confirmed and the disease could be limited within the school. Then the results should be reported back to the CDC.

2. The patients and their family should be supplied with medication against head lice: To prevent family of the infected students from head lice infection, the infected students would be given medication to take back home for use by their family.
3. The patients would be instructed for the correct medication and side effects of the medication should be monitored. No side effects and uncomfortable situations were reported from the infected school children and their family during the period of outbreak.
4. Health education and promotion:
 - (1) The school was requested to step up its effort to educate the children and their family about the importance of taking care of their personal hygiene to avoid the same situation of head lice infection from happening again.
 - (2) The school, school children and their family should be supplied with a health education fact sheet detailing the route of head lice infection and prevention methods.
 - (3) During the period of outbreak, school children with long hair would be encouraged to tie their hair up and be informed of the importance of avoiding of head to head contact. The patients could cut short their hair if they would to boost the therapy effects.
5. Sterilization at home: To kill the worm eggs, larvae, and adult worms, the family would be instructed to clean their bedding sets with boiled water, dryers or irons.
6. Screening for the infected school children would be done again one



week after the administration of initial medication. If the medication effects were not good enough, the medication would be continued till no worm eggs were found.

The outbreak was monitored everyday. If a newly found case was noted, this should be reported immediately. The school administration would help to distribute the medication to the infected school children. As for prevention measures, there was no newly found case since June 16 and the follow-up of the outbreak ended on June 30.

Recommendations

Head lice rarely cause severe illness. [3] Head lice infection has nothing to do with the patients' living standards. No matter how clean or careful one was, it would be possible for him or her to become infected by head lice at some point in life. [3] In this event, the class teacher and parents of the school children were found to have no correct ideas about head lice. They asked the infected school children to get examined in the school health center 3 times a day, and they forced the school children to wash hair in the sink so that they could come back to class. They even asked the children not to go to the school. All these hurt the school children physically and psychologically. We therefore recommended that the school administration should strengthen teachers' level of relevant knowledge to prevent recurrence of the same damage. In addition, from a comparison of the 14 patients, the medication was more effective for students of junior grades than those of senior grades. This might be attributable to the correct use of medication facilitated by parents in the junior student group. Most of the senior students took the medication

themselves without following the correct method, and this was the reason behind the difference in medication effect between the two groups. Therefore, it was recommended that in the future, parents should assist their children in taking medication for preventing or treating head lice infection.

References

1. Jiang, DS, Chen, SC. (2007). An investigation of prevalence and awareness of elementary school students infested with head lice in hualien county. *Taiwan Epidemiol Bull*, 23, 113-28.
2. Fan, PC,,Chung, WC, Fan, CK. (1999). Prevalence and treatment of pediculus capitis infestation among aboriginal school children in northern taiwan. *Kaohsiung J Med Sci*, 15, 209-17.
3. Kang, SW., Chiang, TH, Lin, D. (2000). Prevention of head lice *Taiwan Epidemiol Bull*, 16, 453-456.
4. Hong Kong Centre For Health Protection Available at:
http://www.chp.gov.hk/content954b.html?lang=tc&info_id=25&id=24&pid=9