

Prevalence of head louse infestation in primary school children in Kangwon-do, Korea

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Abstract: We tried to reveal the prevalence rates of the head louse infestation in school children in Kangwon-do, Korea in December 1990. A total of 912 children in four primary schools was examined. The positive rate for adults and/or nits of *Pediculus humanus capitis* was 37.2%. One school was followed-up without specific intervention. There was no significant change of the prevalence rate 6 months after the first examination from 66.0% to 57.3%. We could see the persistent infestation rate if there was no intervention. We are emphasizing the significance of worm positive rate because it represents the potentiality of active transmission.

Key words: Head louse, prevalence, Kangwon-do, Korea

INTRODUCTION

Head louse infestation is one of the health problems in Korea. It is especially endemic in the primary and middle school children in rural area (Pai *et al.*, 1989). We visited four primary schools in December 1990 and examined nits or adults of *Pediculus humanus capitis* from hairs of the children, in order to get the epidemiological data for the control measure.

Children of one school were followed-up six months after first examination without any intervention by health personnel. The difference of rates were analyzed by McNemar's test. In order to know the natural course of infestation in each child, we observed the change of the results for each child six months after. Observing the each child's status of infestation, child who graduated from or

entered in the school during the follow-up period was not included in this counting.

Out of 931 children in four schools examined, 346 positive children with the adults or nits of head louse were detected (37.2%). The rates ranged from 30.0 % to 66.0% according to school (Table 1). The positive rate for girls, 51.8% was higher than that for boys, 22.5% ($P < 0.001$). The positive rates of each grade were shown in Table 2. Positive rates of nits only, adults only and the both were observed out of 270 children of three schools with a results: Nits only was 99 (36.3%); Adults only was 4 (1.5%); Both positive was 59 (23.0%); Both negative was 108 children (40.0%). The worm positive rates in each school were 2.9% in Chugok, 24.1% in Panun and 32.6% in Naedok. Average rate was 23.3% (Table 3). Naedok Primary School children were followed-up 6 months after first examination. Number of children examined in that school decreased from 144 to 110. Sixty three children were positive for adults or nits (57.3%) at the second examination, which is 8.7% decrease from the first exam. This is not

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statistically significant change ($P > 0.05$). Number of children who were subjected to the individual follow-up examination was 102. There was a persistent infestation in 47 children. New infestation occurred in 14 children. Lice disappeared from 14 children. Twenty seven children remained negative consistently (Table 4).

The epidemiologic data for the head louse infestation in Kangwon-do were scanty. Pai *et al.* (1989) only reported the 70.2% in the primary school children in Chongson-gun. Present result, 37.0% is as expected since any control measure was not carried out recently and nation-wide survey showed the rate of 58.9% in the rural area (Pai *et al.*, 1989). The rate of girls were higher than that of boys (Table 2), which was a consistent finding in any groups surveyed in Korea. Pai (1992) showed the worm positive rates in the orphanage and mental hospital, 86.0% and 49.5% each. Those groups are highly infested subjects. The worm positive rate in this work, 23.3% is also high (Table 3). Without any chemotherapeutic intervention, it will be very hard to eradicate this infestation. We observed it by followed-up examination of children of one school, after 6 months without chemotherapy. Prevalence of louse infestation and worm positive rate in this school were 66.0% and 32.6% respectively at the first examination (Table 1 & 3). That of louse infestation was 57.3% at the second

Table 1. Head louse infestation rates in school children in Kangwon-do (1990)

Area	School	No. exam.	No. positive (%)
Chunchon-gun	Chugok	68	29 (39.7)
Yongwol-gun	Kurae	661	185 (30.0)
	Panun	58	35 (60.0)
	Naedok	144	95 (66.0)

Table 2. Head louse infestation by grade and sex

Grade	Toal		Boys		Girls	
	No. exam	No. positive(%)	No. exam	No. positive (%)	No. exam	No. positive (%)
K*	19	13 (68.4)	8	3 (37.5)	11	10 (90.0)
1	121	36 (29.8)	62	12 (19.4)	59	24 (40.7)
2	147	42 (28.6)	69	12 (17.4)	78	30 (38.5)
3	145	60 (41.4)	81	22 (27.2)	64	38 (59.4)
4	159	64 (40.3)	76	18 (23.7)	83	46 (55.4)
5	165	58 (35.2)	78	16 (20.5)	87	42 (48.3)
6	175	73 (41.7)	92	22 (23.9)	83	51 (61.4)
Total	931	346 (37.2)	466	105 (22.5)	465	241 (51.8)

* Kindergarten

Table 3. Worm positive rate (P_{worm}) according to the school

School	No. exam	Positive rate (%)			P_{worm}^*
		nits only	adults only (A)	nits and adults (B)	
Chugok	68	27 (39.7)	0 (0)	2 (2.9)	2.9
Panun	58	21 (36.2)	0 (0)	14 (24.1)	24.1
Naedok	144	51 (35.4)	4 (2.8)	43 (30.0)	32.6
Total	270	99 (36.3)	4 (1.5)	59 (21.9)	23.3

* $P_{worm} = A + B$

Table 4. Follow-up course of head louse infestation in Naedok primary school children

First exam.	Second exam.	No. of children (%)
Positive	Positive	47 (46.1)
Positive	Negative	14 (13.7)
Negative	Positive	14 (13.7)
Negative	Negative	27 (16.5)
Total		102 (100)

examination without treatment. More interesting finding is the change of the louse infestation of each child after six months in this school (Table 4). We can assume that if the worm positive rate is about 30 % in a certain group, and if there is no chemotherapeutic intervention by health personnel, it will be very difficult to lower the prevalence rate of this contact borne arthropod infestation within a short period.

The proportion of children with worm infestation may be important epidemiologically

because pediculosis is transmitted not by nits but by adult worms. Of course the nits become adults, but the maturation takes about 3 weeks. Nymph also can move from one host to the other. However, it is very hard to find the nymph in the field. Short-term effect of any chemotherapeutic agent can be determined by the presence of adult worm. It might be a good parameter to anticipate the future status of the infestation. Further boosting work is necessary to establish this concept.

REFERENCES

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=국문초록=

강원도 일부 국민학생들의 머릿니 감염율

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강원도내 국민학생들에게서 머릿니 감염상황을 알아보기 위하여 1990년 12월 도내 4개 국민학교에서 성충이나 서케 감염 여부를 조사하였다. 912명의 대상 학생들 가운데 37.2%가 성충이나 서케에 감염되어 있었다. 270명에서는 성충 및 서케 감염을 구분하여 조사하였는데, 서케만 발견된 경우가 36.3%, 성충만 발견된 경우 1.5%, 둘다 보인 경우가 21.9%로 머릿니 성충 감염율은 23.3% 이었다. 어떠한 구제법도 시행하지 않고 6개월 뒤 재조사한 한 학교에서 감염율이 처음 66.0% 에서 57.3%로 나타나 유의한 차이가 없었다. 이러한 현상은 고도 감염집단에서 짧은 기간 동안 화학요법 시행 없이 자연적인 감염율의 감소를 기대하기 어려움을 잘 보여준다. 머릿니 감염의 역학에서 총체 양성율이 한 집단에서 직접적인 전파력을 표현하는 지수로 중요하다고 판단한다.

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정정

명태의 혈관에서 발견한 *Aporocotyle theragrae*
(Trematoda: Aporocotylidae)

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주종필 · 주정균 · 이유용 · 윤만모

기생충학잡지 제30권 4호(1992년 12월)에 발표한 상기 논문의 256쪽에 있는 Fig. 1a의 그림이 거꾸로 뒤집혀서 인쇄되었기에 바로 잡습니다.

ERRATUM*

Aporocotyle theragrae (Trematoda: Aporocotylidae) from the blood
vessel of *Theragra chalcogramma*

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The drawing of Fig. 1a on page 256 in the issue Vol. 30, No. 4 (December 1992) should be reversely read.