

Infestation status of head louse and treatment with lindane shampoo in children of primary school and kindergarten in Chinju-shi, Kyongsangnam-do, Korea

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Abstract: The infestation status of head louse among children attending primary schools and kindergartens in Chinju-shi, Kyongsangnam-do, Korea, was investigated between June and July 1999. Out of 2,288 children examined, 3.9% of boys (48/1,242) and 23.5% of girls (246/1,046) were infested with nits or adult/nymphs of lice. The effectiveness of lindane shampoo (1% gamma benzene hexachloride solution) was evaluated after one or two time applications to all the children infested. The negative conversion rate of pediculosis was 93.5%. Effective control measures are needed to control and prevent such ectoparasite infestation amongst children.

Key words: head louse infestation, *Pediculus humanus capitis*, pediculosis, treatment, lindane shampoo, Chinju-shi

Since the first report on the head louse infestation in Korea (Lee et al., 1984), investigators have reported some prevalent cases from school children (Kim et al., 1984; Pai and Huh, 1987; Pai et al., 1989; Ree et al., 1992; Huh et al., 1993; Hong et al., 1995) and those of people who were admitted to mental hospitals and public welfare facilities (Pai, 1992; Huh et al., 1994; Huh and Pai, 1995). Furthermore, the drug effectiveness for delousing was evaluated (Pai, 1992; Ree et al., 1992). In this study, we investigated the infestation status of head louse and the effect

of lindane shampoo on children in primary schools and kindergartens.

A total of 2,288 primary school and kindergarten children from 11 regions (myons) in Chinju-shi was examined for the presence of nits, nymphs and/or adult head lice by naked eyes from June through July 1999. All children infested with lice were treated with lindane shampoo (1% gamma benzene hexachloride). The effectiveness of the treatment was evaluated by examining the presence of nits or lice at 7-10 days after the treatment. If the live nits or lice were detected, the children were subjected to the second shampoo treatment.

Out of 2,288 children examined, 294 (12.8%) were found to be infested with nits

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Table 1. Prevalence of head louse infestation in primary school and kindergarten children in 11 regions (myons), Chinju-shi

| Administrative area (myon) | Name of School | No. of student examined | No. of student infested (%) |
|----------------------------|--------------------------------|-------------------------|-----------------------------|
| Ibansong | Ibansong | 125 | 45 (36.0) |
| | Ibansong (kind.) ^{a)} | 104 | 29 (27.9) |
| Ilbansong | Ilbansong | 314 | 64 (20.4) |
| Sabong | Sabong | 109 | 15 (13.8) |
| Chisu | Songjong | 66 | 11 (16.7) |
| Chinsong | Chinseong | 166 | 12 (7.2) |
| Kumkok | Kumkok | 92 | 20 (21.7) |
| Munsan | Munsan | 603 | 68 (11.3) |
| Taepyong | Taepyong | 53 | 0 (0) |
| Sukok | Sukok | 91 | 10 (11.0) |
| | Sukok (kind.) ^{a)} | 48 | 1 (2.1) |
| Taekok | Tuko | 82 | 13 (15.9) |
| | Taekok | 238 | 0 (0) |
| | Tanmok | 56 | 0 (0) |
| | Chiphyun | 89 | 0 (0) |
| Michon | Angan | 52 | 6 (11.5) |
| Total | | 2,288 | 294 (12.8) |

^{a)}kindergarten**Table 2.** Infestation status of head louse by different grades and sexes

| Grade | Boys | | Girls | | Total | |
|---------------------|--------------|-----------------|--------------|-----------------|--------------|-----------------|
| | No. examined | No.(%) positive | No. examined | No.(%) positive | No. examined | No.(%) positive |
| Kind. ^{a)} | 207 | 17(8.2) | 163 | 32(19.6) | 370 | 49(13.2) |
| 1 | 190 | 5(2.6) | 140 | 33(23.6) | 330 | 38(11.5) |
| 2 | 173 | 6(3.5) | 150 | 41(27.3) | 323 | 47(14.6) |
| 3 | 175 | 4(2.3) | 148 | 39(26.4) | 323 | 43(13.3) |
| 4 | 165 | 8(4.8) | 153 | 37(24.2) | 318 | 45(14.2) |
| 5 | 172 | 4(2.3) | 150 | 27(18.0) | 322 | 31 (9.6) |
| 6 | 160 | 4(2.5) | 142 | 37(26.1) | 302 | 41(13.6) |
| Total | 1,242 | 48(3.9) | 1,046 | 246(23.5) | 2,288 | 294(12.8) |

^{a)}kindergarten

and/or adults/nymphs of head lice. The prevalent cases by each school and each kindergarten are shown in Table 1. The positive rate of head louse was 3.9% (48/1,242) for the boys and 23.5% (246/1,046) for the girls. The prevalent cases according to different academic grades are presented in Table 2. The negative conversion rate of head lice infestation after the second treatment with lindane shampoo was 93.5% (Table 3).

In this study, the infestation rate was not significantly high when compared to those of previous reports (Kim et al., 1984; Lee et al., 1984; Pai and Huh, 1987; Pai et al., 1989; Huh et al., 1993). The infestation rate for the girls, however, was remarkably higher than the boys. This finding was consistent with those of previous studies (Pai et al., 1989; Huh et al., 1993; Hong et al., 1995). However, there were no significant differences in the

Table 3. The negative conversion rate of head lice infestation after treatment with lindane shampoo

| Items | Boys | Girls | Total |
|---|-----------|------------|------------|
| No. of cases treated | 48 | 246 | 294 |
| No. of negative conversion cases after first treatment | 41 | 177 | 218 |
| No. of negative conversion cases after second treatment | 5 | 52 | 57 |
| Total No. (%) of negative conversion cases | 46 (95.8) | 229 (93.1) | 275 (93.5) |

infestation rates among different academic grades.

The negative conversion rate of head louse infestation after the second application of lindane shampoo was relatively high (93.5%). Taplin et al. (1986) obtained 43.3% pediculicidal efficacy in the treatment with 1% lindane shampoo, and 96.6% with 1% permethrin cream rinse. Pai et al. (1989) reported 87.1% reduction in patients after a double treatment with 0.2% permethrin solution. Pai et al. (1991) compared the pediculicidal effects between 24% benzylbenzoate solution and 0.2% permethrin solution after two sequential treatments. The reduction rates were 87.9% for the 24% benzylbenzoate solution group and 72.3% for the 0.2% permethrin solution group. On the other hand, Ree et al. (1992) reported a 93.4% reduction rate after a single application of Sumithrin powder in the mass treatment of head louse infestation.

For a successful control of such ectoparasites among children in primary schools and kindergartens, cooperations between the school authorities and the public health centers should be established, and a team of physicians, teachers, parents, and health care officials will be needed.

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