Hot Air Blows Away Head Lice Infestations

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SALT LAKE CITY, Nov. 7 -- Head lice appear to fall prey to heavy-duty blow-drying just as well as to chemical treatments and more so than to louse combs, researchers here said.

For children with pediculosis, the best of six approaches to a delousing blast of hot dry air killed 98% of lice eggs and 80% of hitched lice, curing nearly all infestations, reported Dale H. Clayton, Ph.D., of the University of Utah, and colleagues, in the November issue of Pediatrics.

Although few rigorous studies have evaluated Pediculus humanus capitis eradication rates in infested patients, a previous study indicated that the chemical treatment Nix had a lower kill rate of about 60% for lice eggs.

By comparison, the researchers found that a normal hair dryer aimed at the base of hair, divided into 20 large sections, killed 55.3% of hitched lice and 97.9% of lice eggs after 30 minutes of blow drying. It killed 44.7% more lice and 42.2% more eggs than a louse comb (95% confidence interval 36% to 53% and 39% to 45%, respectively).

The most effective hot-air method was the LouseBuster device.

"Hot air probably kills the lice and eggs by desiccating them," Dr. Clayton and colleagues wrote. "It is unlikely that lice will evolve resistance to heat, because this would require fundamental changes in their water physiology."

Resistance has become a problem for many chemical shampoos, which are "not very effective at killing louse eggs" anyway, the researchers said. Carefully combing hair with a louse comb is effective but time consuming, they said. Six to twelve million cases of pediculosis occur in the United States annually.

The researchers recruited 169 infested children (94.1% female, median age 10) from local elementary schools. Children who had used anti-lice shampoos or home remedies in the two weeks prior to the study were excluded. Children younger than six were also excluded as it was thought that it would be too difficult to get them to sit still long enough.

After using a louse comb to confirm infestation, one side of each participant’s scalp was combed thoroughly to remove all lice and eggs as a control. The child’s whole head was then treated with one of the six, approximately 30 minute hot air treatments.

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followed by a thorough combing of the non-control side of the head.

All lice and eggs removed by combing were kept in a portable incubator and counted under a dissecting microscope while keeping track of the number alive versus dead. Egg hatching was monitored daily for two weeks.

Dr. Clayton and colleagues commented that both high air volume and consistent temperature appeared to be important. The researchers found:

- A handheld dryer with hair divided into 10 sections yielded 20.8% mortality for hatched lice and 96.7% mortality for eggs (absolute difference versus control 8.9%, 95% CI -4% to 21%, and 45.4%, 95% CI 42% to 49%).
- A bonnet-style hair dryer with twice the airflow of a single dryer but nonuniform temperature eliminated just 10.1% of lice and 88.8% of eggs (absolute difference compared to control 7.3%, 95% CI 1% to 13%, and 19.2%, 95% CI 15% to 24%).
- The higher air volume delivered by a detached wall-mounted dryer, similar to those found in public restrooms but with a hose, yielded 62.1% mortality for hatched lice and 96.5% for eggs (absolute difference versus control 47.2%, 95% CI 39% to 55%, and 47.5%, 95% CI 43% to 52%), and
- The similar airflow but more even heating (modulated by an electronic feedback loop) of the LouseBuster without the comb attachment killed 76.1% of hatched lice and 94.0% of eggs (absolute difference versus control 67.8%, 95% CI 62% to 72%, and 46.0%, 95% CI 42% to 50%).

None of the methods had any short- or long-term adverse effects. The investigators reported the following discontinuation rates:

- 2% among the 54 patients tested with the bonnet-style dryer,
- 4% in the 26 participants treated with the handheld blow dryer using hair divided into 10 sections,
- 4% among the 27 children treated with the handheld blow dryer and hair in 20 sections,
- 13% of the 15 children treated with the wall-mounted dryer, and
- 0% in both of the 18-patient LouseBuster groups.

In one-week follow-up inspections on patients treated with the LouseBuster plus comb attachment, only one patient had any lice remaining (a single live male louse, “not a viable breeding population”).

The researchers said the efficacy of hot air treatments was not affected by humidity, the participants' age, hair length, or hair thickness. They tested the methods in patients of African, European, Hispanic, and South Pacific Island descent.

Some of the authors have U.S. and international patents pending for the LouseBuster.

Also noted in the acknowledgments was an apology by Joseph S. Atkin, one of the authors, to his wife for accidentally giving her head lice.

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