

CORRESPONDENCE

Head Lice—Epidemiology, Biology, Diagnosis, and Treatment

by Laura Meister, and Falk Ochsendorf in issue 45/2016

Effectiveness of Pyrethrum Extracts

Discussions about loss of effectiveness of head lice drugs containing pyrethrin or pyrethroid due to possible development of resistance are frequently published. However, in 2016, a randomized controlled comparative study of 107 children with acute lice infestation showed, for the first time and with high-level evidence, that *Goldgeist forte* (pyrethrum extract) continues to achieve high healing rates: adjusted to re-infestation, the rate of healing after two treatments was as high as 94% (1). The comparative test product in this study was the medical product *Mosquito Med Läuse-shampoo 10* (head lice Shampoo 10), with a 96.1% healing rate after 10 days. This slightly higher healing rate was not statistically significant. Both products were well tolerated. The article by Meister et al. (2) did not include this recent study but should do so, as it makes an important contribution to the future discussion of differences in the efficacy of medicinal devices and medicinal products.

The study also examined the efficacy of *Goldgeist forte* for the first time in the original formulation approved for Germany. For example, *Goldgeist forte* contains a pyrethrum formulation with a total of six different active pyrethrin compounds. The ratio of these are standardized and produces a wider range of activity, which first paralyzes (knock-down effect) and then kills (kill effect) head lice.

In addition, pyrethrum synergizes in *Goldgeist forte* with the antioxidant piperonyl butoxide, which is known to be a resistance breaker. The combination of these specific formulations allow *Goldgeist forte* to remain clinically effective against lice that have genetic mutations making them resistant to knock-down. However, the corresponding resistance mechanisms do not necessarily lead to loss of efficacy in pyrethrin- and pyrethroid-based drugs, as has been demonstrated earlier in application observations and in two randomized controlled studies carried out by the University of Kiel (3).

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Conflict of interest statement

The author is the head of quality control at the company Eduard Gerlach GmbH, which produces *Goldgeist forte*.

Different Recommendations

In the latest continuing education article on the subject of head lice, the authors state (1) that the lay media repeatedly recommend to keep all non-washable textiles, underwear, bed linen, and soft toys in sealed plastic bags for three days. However, they also state that this recommendation is not scientifically justifiable.

Nonetheless, this procedure is exactly what the Robert Koch Institute (RKI) advises doctors on the subject of head lice infestations (2).

Based on the very good reputation of the RKI and the widespread knowledge of this information among patients, it is very difficult for me as a doctor to convey to my patients the viewpoint of the authors, which I consider to be the right one. Why does the RKI still give the exact opposite recommendations?

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The author declares that no conflict of interest exists

In Reply:

We would like to thank Dr. Stukenbrock for the reference to the study by Wolf et al. (1). This work was only published after the first submission of our article. Therefore, it was not included in the table comparing randomized controlled trials for the treatment of head lice for local therapeutics approved in Germany (that were published since 2003).

The primary objective of this study (1) was to investigate the efficacy and safety of some mineral oil-based shampoos. The pyrethrum extract-containing product was used in the control group. Both preparations showed good efficacy and tolerability, and the mineral

oil-containing shampoos showed non-inferiority. Both preparations provide a successful treatment.

It should be noted, however, that no published data are available on the possible ovicidal efficacy of pyrethrum extracts. If the active ingredient acts only on nymphs and adult head lice, but not on the already deposited eggs, precisely-timed repetitive treatments are necessary to break the propagation cycle (2). This introduces a possible source of error in clinical practice. Thus, a one-time application of ovicidal, physically active products, which are not affected by development of resistance, appears to be more practical.

Anja Weilandt correctly points out the contradiction between our recommendation and that of the Robert Koch Institute (RKI) concerning the handling of inanimate objects in the context of head lice infestation. As no sources are given in the RKI brochure to justify these recommendations, the reasons behind them

remain unclear. Our statement—that transmissions to inanimate objects are irrelevant in terms of infection—is based on the results of the field experiments presented in our article (2). DOI: 10.3238/arztebl.2017.0250c

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The author declares that no conflict of interest exists.

CLINICAL SNAPSHOT

The Cholesterol Embolism Syndrome



This 75-year-old man complained of unbearable pain in both feet, at rest, of two months' duration. Physical examination revealed blue toes, fissures, petechial hemorrhages, and ulcerating gangrene of the ankles. There was no physical or laboratory evidence of endocarditis, peripheral arterial occlusive disease, vasculitis, or infection. The patient had neither cancer nor diabetes and thus did not have either a paraneoplastic syndrome or a diabetic foot. Three months before, he had been found to have coronary heart disease and had undergone the insertion of coronary stents in two separate cardiac catheterization procedures. These interventions gave rise to cholesterol emboli, which led to persistent, severely painful ischemic disturbances in both feet. A skin biopsy

revealed the emboli, with characteristic whetstone-like cholesterol deposits (cholesterol clefts). There is no causally directed treatment for the cholesterol embolism syndrome, also known as the "trash foot" syndrome. Often, it can be definitively treated only by amputation (frequency after aortic procedures, 0.6–0.9%). Interventions such as catheter-based studies and procedures, aortic surgery, and aortic stenting can cause cholesterol embolism not only to the feet, but also in the eyes, internal organs, and brain.

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