

Head Lice

Head lice infestations, also known as pediculosis capitis, are common among school-aged children, though they can affect individuals of all ages. While there are several treatments available to address head lice, recent challenges, including increased resistance to common insecticides, have led to the development of new therapies and alternative treatment approaches.

Standard Treatments

Over-the-counter (OTC) treatments for head lice are widely available and typically contain active ingredients such as permethrin, pyrethrins, or organochlorine insecticides. Permethrin and pyrethrins are the most commonly used agents. Permethrin is a synthetic insecticide that works by disrupting the nervous system of lice, leading to their death. Pyrethrins are natural insecticides derived from chrysanthemum flowers, which have a similar mechanism of action.

For optimal results, these treatments should be applied as per the manufacturer's instructions, which often include a second application 7-10 days after the first treatment to kill any newly hatched lice. In addition to chemical treatments, physical removal of lice and nits (lice eggs) is crucial. This can be achieved by soaking the hair in vinegar for at least five minutes to loosen the nits, followed by the use of a fine-toothed comb or nit comb to manually remove the eggs from the hair shaft.

Resistance to Conventional Treatments

Despite the availability of effective treatments, there has been a notable increase in treatment failures in recent years. Many failures are attributed to improper application or re-infestation, but there has also been growing evidence of lice developing resistance to the insecticides commonly used in OTC treatments. Research has shown that lice populations are becoming less susceptible to permethrin and pyrethrin, likely due to genetic mutations that alter the lice's ability to metabolize or evade the insecticides. Resistance to permethrin, in particular, appears to be more widespread compared to other treatments.

Newer FDA-Approved Treatments

In response to resistance issues, newer topical treatments have been developed and approved by the U.S. Food and Drug Administration (FDA) for head lice treatment. These include:

1. **Malathion lotion (Ovide)** – Malathion is an organophosphate insecticide that works by inhibiting the enzyme acetylcholinesterase, which is crucial for nerve function in lice. It is effective against both lice and nits, though it must be applied carefully as it is flammable.
2. **Benzyl alcohol lotion (Ulesfia)** – This treatment works by suffocating the lice and preventing them from reproducing. Benzyl alcohol is a less toxic option compared to traditional insecticides.
3. **Spinosad suspension (Natroba)** – Spinosad is derived from a naturally occurring bacterium and kills lice by causing hyperexcitation of their nervous systems. It has been shown to be effective in a single application, making it a convenient option for patients.
4. **Ivermectin lotion (Sklice)** – Ivermectin is a well-established antiparasitic drug used to treat a range of parasitic infestations, including head lice. It works by paralyzing the lice, leading to their death. Ivermectin lotion is effective after a single application and is safe for use in children over 6 months of age.

Oral Ivermectin for Resistant Lice

In cases where topical treatments fail, oral ivermectin has been considered as an alternative therapy. Although ivermectin is not FDA-approved for head lice in its oral form, it has demonstrated effectiveness in treating lice that are resistant to traditional treatments. Ivermectin acts by binding to chloride channels in the nervous system of the lice, causing paralysis and death of the parasite.

The standard oral dose of ivermectin is typically a single dose, which has been shown to be approximately 75% effective in eradicating lice. Studies have indicated that the effectiveness of ivermectin improves when combined with nit combing and when all members of a household are treated simultaneously. While ivermectin is generally considered safe, caution is advised when prescribing it to pregnant women or children weighing less than 30 pounds, as the safety profile in these populations has not been adequately studied.

Conclusion and Future Directions

Head lice remain a common and persistent problem, but advances in treatment options offer improved outcomes for affected individuals. While traditional treatments containing permethrin and pyrethrins remain widely used, growing resistance to these agents necessitates the use of newer therapies, such as malathion, benzyl alcohol, spinosad, and ivermectin. Oral ivermectin, though not FDA-approved for head lice, has shown promise in treating resistant infestations. As resistance to existing treatments continues to rise, further research into alternative therapies and the development of new insecticidal agents will be critical in managing head lice infestations in the future.

References

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