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Head lice

Head lice have infested humans for thousands of years. Infestation with lice is quite often inappropriately considered related to poor hygiene and low socio-economic status. In fact people of all walks of life can get infested with lice and the stigma of catching lice is often borne out of ignorance.

Head lice



Louse



Dermatitis



Eggs

Life Cycle

Head lice grip on to hair by their claws and rapidly move from hair to hair. They don't jump or fly but can quickly move from one person to another if in close proximity. By injecting saliva into an infected person's scalp they are able to suck blood which provides their nutrition. This can occur up to five times a day. A short time away from the scalp means the lice are unable to feed and therefore die.

Itching and irritation results from the louse feeding.

Lice lay eggs (nits) on the hair shaft close to the scalp. Here the warmth of the scalp will incubate them. The nits are cemented on to the hair and are carried away from the scalp as the hair grows. They hatch at around 8 days. The empty egg case then turns white and becomes more easily seen. The louse reaches full maturity at around 10 days after hatching. If mating occurs the female louse can lay 50–100 eggs at a rate of six per day.

In most infestations there are usually only a dozen or so lice at any one time, but there can be hundreds of eggs.

Clinical Features

Head lice usually cause an itch and irritation in the scalp. This can take several weeks to develop after the initial infestation.

Scratching can cause crusting and scaling on the scalp. Occasionally secondary bacterial [infection](#) of the scalp results in small sores on the scalp with tender glands in the neck. [Dermatitis](#) can also occur with a heavy infestation of lice. Fortunately head lice are not known to carry any diseases which can affect humans.

It is important to identify the lice (or nits) to make a correct diagnosis. Lice are around 3mm in length and can

be seen moving from hair to hair. Unhatched eggs are within a few millimetres of the scalp and have a dark area within the shell while hatched eggs are transparent.

Occasionally the eyelashes can become infested.

Treatment

Treatment of head lice usually consists of [chemical treatments](#) (pesticides) and/or [physical methods](#) (combs).

Chemical Treatment

In New Zealand insecticides available (March 2008) to treat head lice include:

- Pyrethrum / pyrethrin / Phenothrin
 - Full Marks Mousse
 - Parasidose Extra Strength Lice Shampoo
- Synthetic pyrethroids (permethrin)
 - Lyderm Cream
 - Pyrifoam Shampoo
- Organophosphates (malathion, also known as maldison)
 - A-Lices Scalp and Body Hygiene Shampoo
 - Derbac-M Liquid
 - Malathion Lotion
 - Prioderm Cream Shampoo

The active ingredients of Para Plus Aerosol Spray are malathion, permethrin and piperonyl butoxide.

Pyrethrins are naturally occurring insecticides found in some flowers such as the chrysanthemums. In high doses they can be toxic to humans. Permethrin is a synthetic compound, which is as effective as pyrethrin but has much less toxicity.

Lotions, liquids or cream are preferred to shampoo. All are topical applications; therefore they are applied directly to the scalp. Even so, a small portion may be absorbed into the body and for this reason it is important to follow the manufacturer's advice on how long to use it and how often to repeat it.

Important points to remember when treating head lice

- Regularly examine your children's scalps. Look for nits close to the skin, behind and above the ears and on the back of the neck.
- Treat all members of the family at the same time.
- Not all eggs are killed with one application of insecticide, therefore a second application is recommended 7 days later.
- The lice may not be killed immediately and may take a day or so to die.
- The presence of nits doesn't mean ACTIVE infection. Hatched nits (empty eggshells) will remain attached to the hair shaft until the hair grows out, unless they are actively removed or the hair is cut.
- Machine-wash all bed linens, clothes, towels in hot water.
- Items that can't be washed such as soft toys and helmets should be placed in an airtight plastic bags for two weeks.
- Vacuum pillows, etc.
- Spray hairbrushes, combs with fly spray

Physical methods

Physical methods of removing nits and lice, often a neglected part of treatment, can be effective on their own. They are however more reliable used in conjunction with insecticide treatments. They are time consuming.

Eggs are cemented strongly to the hair shaft and simple washing usually doesn't remove them. Nit combs are the most effective way of physically removing the nits. They are available from chemists, pet stores or can be purchased over the Internet. Metal combs are much more effective than plastic. Electrical combs designed to 'zap' lice on the hair shaft are not effective.

- Using a nit comb is easiest when the hair is wet. Combing may be easier if a conditioner is applied first. It is best done after treating with insecticides.
- Use a good light.
- Work through the hair in sections and comb down the hair shaft towards the scalp to try and remove the stubborn nits.
- It may be easier if this is done while the child is kept occupied (for example watching television).
- Repeat the combing at least twice more on consecutive nights if possible and then weekly.

Cutting the hair short (i.e. No. 1 cut) may be useful in difficult cases. This makes searching and removing lice easier but won't prevent reinfestation.

Other methods

There are numerous other methods that have been used to eradicate lice. The effectiveness of these treatments has not been extensively studied.

These include:

- **Antibiotics** Co-trimoxazole (sulfamethoxazole and trimethoprim) is sometimes prescribed as a second line treatment for head lice. The belief is that the bacteria in the gut of the lice, which are essential for the digestion of nutrients, are killed when the lice feed on the blood of a person taking this antibiotic. They then starve to death.
- **Suffocating Agents** Many home remedies have been used on the scalp to try and smother the lice. These include mayonnaise (full fat), olive oil, petroleum jelly (Vaseline®), which should be left on the scalp for at least two hours. This process can be messy. These methods only kill active lice and have no effect on nits. Therefore the treatment needs to be repeated. Kerosene should not be used; it is potentially dangerous because it is neurotoxic and also highly flammable.
- **Natural oils** There are several products available that are based on natural oils. They may irritate or cause contact dermatitis.
 - Electric Blue Headlice Cream (clove oil, tea tree oil, rosemary oil) and conditioner (clove oil, tea tree oil, lavender oil, lemon oil, rosemary oil, cetrimide)
 - Lice Blaster (Tanacetum cinerifolium flower, Adhatoda vasica leaf, Stemona sessifolia root, Echinacea purpurea herb flower, melaleuca oil)
 - Parasidose Lice Repellent (eucalyptus, clove, rose, palmarosa, lavender, mint, citronella, geranium, ylang ylang, petitgrain essential oils)

Treatment failure

Failure to eradicate lice is a common and frustrating problem.

There may be a number of reasons for this

- Reinfestation from another person or from contaminated clothes, hats, etc.
- Resistance of lice to insecticides. If a course of treatment fails to cure, a different insecticide should be

used for the next course.

- Misdiagnosis of inactive infection. It is important to look for active lice not just nits.

There is no information on the resistance patterns of lice in New Zealand. Recent studies in the USA suggest that resistance has developed where pyrethroids have been used as the main treatment for lice. This usually occurs in chronically infested individuals that have been treated many times over a short period. Lice resistant to malathion have also been detected in a recent UK study.

Prevention

It is difficult to prevent head lice infestation in children. Community-wide or school-based education programmes informing parents of methods to eradicate lice, and community health teams in schools, are the most effective ways in keeping infestation rates down.

Related Information

References

- [Trying to Keep Ahead of Lice: A Therapeutic Challenge](#) – Medscape, from Skin Therapy Lett. 2006;11(10):1–6.

On DermNet NZ:

- [Body lice](#)
- [Pubic lice](#)

Other websites:

- [Head Lice](#) – Medline Plus
- [National Pediculosis Association](#)
- [Harvard University](#)
- [James Cook University](#) – North Queensland Australia
- [Head Lice](#) – The Childcare Setting, CDC
- [Best treatments](#) – clinical evidence for patients from the BMJ: Head lice
- [Lice](#) – emedicine dermatology, the online textbook

Author: Steven Lamb MBChB

Department of Dermatology, Health Waikato.

DermNet does not provide an on-line consultation service.
If you have any concerns with your skin or its treatment, see a [dermatologist](#) for advice.

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