

Dealing with head lice

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Unlike many other countries, it is relatively rare for dermatologists in the UK to be confronted with a case of head louse infestation, unless it has specifically been referred because other practitioners have failed to deal with it or there are complications arising from it. However, knowing what to do, if asked, is difficult in a field that has changed more rapidly in the past decade than during the previous 50 years. Head lice have not, themselves, changed, but human activity has influenced their epidemiology in various ways that seem to have made management more difficult.

Passing them around

Of course, lice are transmitted by human social activity, which is why the most socially interactive group in the population is most at risk. Children constantly engage in physical contact, and during their socially formative period (from around six to seven years up until their early teens) they not only frequently change their closest friends, they also have a larger number of, and more regular, physical contacts than at any other time in their lives. As a result, head lice have come to be associated with schools, although in reality they are associated with school-aged children – after all, children in developing communities with no access to schools get head lice just as often.

Which sector of the population is most at risk, however, has changed over the decades. Hospital data from the 1940s found a peak in incidence around the ages of five to seven, which was maintained in girls at a high level throughout primary school.¹ At that time it was likely that girls spent a considerable amount of time caring for younger siblings, so transmission would occur back and forth between them. Later, younger children became less affected and peak infestations moved into the mid-primary school age, but still tailed off in the early teens. Now we are seeing a blurring of this, because more families are experiencing difficulty in eliminating infestation over longer periods so, again, infestation is spreading to infants, but also moving up the age groups. It is now not unusual to find teenagers of 15 or 16 with lice – mostly acquired from younger siblings, but also from their peers, showing just how much head-to-head contact occurs in this age group.

Knowing who is infected

Diagnosis of infestation can be tricky, even for the experienced, and you do need proper tools. The

old ‘part-and-look’ approach is only about a third as effective as combing with a proper plastic detection comb.² You need the right comb with rigid, square-faced teeth set no more than 0.3 mm apart. Even then, should you comb wet or dry? Wet combing with conditioner has been mooted as a ‘gold standard’, but conditioner often makes finding small lice difficult. With dry hair, static charge can throw lice off the comb if you do not hold them down – this can be avoided by first combing a small amount of olive oil or a light mineral or silicone oil into the hair. This immobilises the lice and stops static. Even moderate infestations may require several passes of the comb through each sector of hair just to find one, so several minutes of combing may be needed for detection.

Finding eggshells, as was the practice for the old school inspections, is not a good guide, especially as some families suffer repeated infestations. Nor is pruritus a guide, partly because so many people seem to have itchy scalps these days, and partly because many people with lice do not itch, whereas others can pinpoint a louse while it is biting and just dip in with their fingers and pick out the insect. However, the villain of the piece is the asymptomatic adult. Around 15% of participants in our clinical studies are adult carers, some of whom are more heavily infested than their children, but are unaware of the presence of the lice.

Treatment

Until 2005, apart from a few fringe preparations, just about all head louse treatments were based on neurotoxic insecticides. During the 1990s, acquired resistance to these insecticides was reported from various communities, but this was variable in distribution and also limited in its effect by other components of the formulations in use.³⁻⁶ Despite attempts to mitigate the effects of resistance by rotation, ‘mosaic’ prescribing, and to dilute the prevalence of any recessive genetic components by using alternative approaches to treatment such as combing (which could allow non-resistant forms to reassert their dominance), resistance persists – and far from diminishing, it appears to be intensifying. For example, in Wales it was believed that malathion was not affected, unlike most of England, but a recent study shows that although less widespread and intense, resistance now affects nearly half of cases, compared with around 60% in England.^{7,8}

Three medicinal products remain in the UK: 1% permethrin crème rinse (Lyclear® crème rinse

{Omega Pharma UK}), 0.5% malathion liquid (Derbac-M® liquid [SSL International]), and 4% dimeticone lotion (Hedrin® 4% lotion [Thornton & Ross]). Of these, only dimeticone is not affected by resistance. However, patients also have the choice of using several Class I medical device products with a liquid dosage form. The majority of these are based on mineral oils (Lyclear mousse, spray and shampoo), synthetic oils (silicones) (Hedrin spray and liquid gel), fatty acid esters (Full Marks® solution [SSL International]), fixed vegetable oils (Nitty Gritty® solution [Ceuta Healthcare], and recently a surfactant (Hedrin Treat & Go mousse). Although clinical evidence for efficacy is a compliance requirement, relatively few are supported by published data from clinical trials.

If these new products are so good, why are lice not in decline?

Recent clinical studies have shown that two of these preparations, a mixture of cyclomethicone (volatile silicone) and isopropyl myristate (fatty acid ester) (Full Marks solution) was effective in 82% of people using two applications, a week apart,⁹ and a 4% dimeticone liquid gel (non-volatile silicone) (Hedrin Once Liquid Gel) was effective in 100% of trial participants with a single application.¹⁰ Even the best treatments can go wrong if not used properly, but these seem to offer more security of outcome than the current medicinal preparations (4% dimeticone lotion is best, with 70% cure, compared with <20% cure for permethrin, and around 40% for malathion).⁵⁻⁹ The synthetic oily materials are potentially safer than insecticide-based products as there is no transdermal absorption and fewer excipients that could have side-effects (that is, no preservatives). They are also less likely to irritate than products of natural origin, such as fixed vegetable oils and essential oils, which not only have little or no evidence in their support, but also are susceptible to resistance mechanisms in the same way as insecticides; for example, terpinen-4-ol in tea tree oil has essentially the same mode of action as malathion – it is an acetylcholinesterase inhibitor.¹¹

Key points

- It is best to inspect dry hair for lice, with the addition of a small quantity of olive oil to immobilise the lice and prevent static.
- Due to families treating lice in isolation, children are easily reinfected by other families.
- Continuous monitoring is important to keep on top of reinfestation.

Management of continual problems

So, if these new products are so good, why are lice not in decline? The simple answer is that most families are acting in isolation. It is relatively rare for several families who know each other to get together to eliminate lice from their children at the same time, and even then there will be contacts for their kids who are not involved in the treatment and could, therefore, start the whole cycle over again.

Most people rarely check their children's heads. A recent survey in Norway found that of more than 6,000 households, most people only checked the children for head lice twice a year, if that, so lice could be running free for months without anybody noticing.¹² Even campaigns to encourage regular checking for lice (for example, 'Once a week, take a peek!') seem to have had little effect in encouraging the majority of families to examine their children routinely. Consequently, many children have lice for weeks, or even months, before anything is done about them and during that time they can easily reinfest their friends time and again.

Added to this problem, the introduction of medical devices in this therapeutic area has inadvertently spawned a proliferation of other products that are not 'CE' marked, make claims of being able to eradicate head lice, and that not only have no evidence to back these claims, but also do not contain recognised active materials. However, numerous carers, frustrated by lack of success with other preparations, try these products – which only exacerbate their frustration when they fail.

Proper management can only be achieved by:

- Routine detection combing to identify infestations at the earliest stage
- Using preparations with good clinical evidence to back them up, as outlined in this article
- Ensuring thorough coverage of the hair and scalp to ensure all lice and louse eggs have been adequately coated with the product
- Checking, by detection combing, to ensure the lice have been eliminated by the treatment
- Repeating a thorough treatment after a week, if the instructions require it and/or if lice of any size are found at any stage
- Continuing to monitor, by detection combing, to ensure no lice have slipped through, or that the child has not been reinfested
- Ensuring as many as possible of the child's friends can be treated at the same time.

These points are nothing new, but it is amazing how difficult it is to persuade people to follow these straightforward (although not always simple to practise) guidelines.

When a physician is confronted with a refrac-

tory case, there is the problem of finding out what has been done in the past – people can be hazy about what they used, and when, in previous attempts to get rid of the lice. It does help to know if lice were eliminated at any stage, but then returned through reinfestation and, if so, when this occurred. However, most people never bother to check to see if a product has worked; they just wait to see if the kids complain, pick out more lice or start to itch again. For those on low incomes, head lice can be a drain on their resources.

The alternative approach of wet combing with conditioner is not successful either. Most people enrolling in recent clinical studies have claimed to use this, but with no success over long periods. This is possibly because the lice have gone on to develop resistance to the surfactants in the conditioner that killed lice when this method was first introduced.

So, laying down step-by-step guidance, as outlined above, is a major component of dealing with the difficult cases – they just need to be followed through thoroughly ■

Declaration of interest

None declared.

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