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المحاضرة الثالثة طفيليات تسلسل (١٤) العدد (٣)

Medical Parasitology

Skin infections and allergy caused by insects

Lice

3rd class

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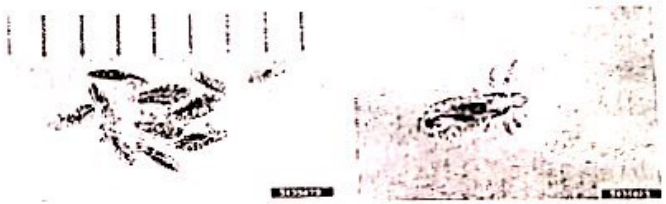
LICE

HUMAN HEAD LOUSE

- Head and body lice are wingless, flattened insects with mouthparts for sucking blood. The human head is somewhat narrower than the rest of the elongated body.



Human head louse, *Pediculus humanus capitis*

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- Adults are small, about the size of a sesame seed (2.5–3.5 mm; 0.1 inch). Head and body lice are gray to tan in color. If they have fed recently, the blood meal will be visible through the body and make them appear darker.

- Bloodsucking lice have a large claw at the end of each leg that fits snugly around a hair shaft, allowing them to cling securely to their host or the fibers of their clothing. Lice cannot fly or jump; they can only crawl.

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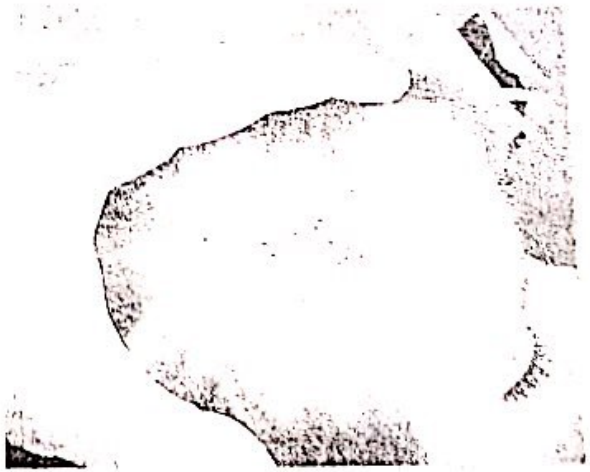

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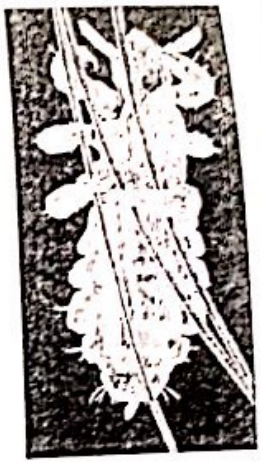
LICE MAIN LOCATIONS, HABITAT, & TRANSMISSION

- Head lice are found on the head, frequently around the ears and around the hairline above the back of the neck.
- Head lice always lay their eggs on the hairs of their host.
- Body lice are found in clothing and bedding that has been heavily worn or used for long periods of time without laundering.
- Head lice will die after 1–2 days if they fall off the host and don't find a new one.



- Body lice will soon die if the infested clothing or bedding is discarded and another person doesn't begin wearing it or return to sleep in it because lice need to feed on human blood several times daily.

- Body lice are thought to have diverged from head lice about 100,000 years ago, or about the time humans began wearing clothing

- Head lice are spread through direct human contact and the sharing of infested personal items.
- Infested hats, brushes, hair ornaments, headgear, coats, pillowcases, stuffed animals, blankets, or towels can all serve as a means of spreading head lice, but this is much less common than head-to-head contact with someone who has lice.

- Head lice move easily from person to person in group settings such as schools, day care centers, camps, etc., where people and their personal items are in close contact.

HUMAN LOSSES AND DAMAGE

- Head and body lice are blood feeders and require multiple blood meals throughout their lives for survival.
- Only a small amount of blood is ingested by a single louse each time it feeds, but each act of feeding is a source of discomfort and intense irritation due to an allergic reaction to the bites.
- Scratching the bites may break the skin and lead to secondary infection of the skin by bacteria, requiring additional medical attention.

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- Head lice are generally not thought to transmit disease, but some evidence suggests that they may be implicated with some bacterial diseases.
- Historically body lice have transmitted several infectious diseases, including typhus and relapsing fevers.
- Typhus and relapsing fever are introduced into the human host by scratching and rubbing the louse feces or the louse body into the skin; these diseases are not transmitted through the act of the louse biting the host.

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Life Cycle

- With respect to life cycle, Lice have an incomplete life cycle consisting of egg, nymphal, and adult stages.
- The oval, whitish eggs (also called nits) of head lice are firmly glued at an angle to hair shafts close to the skin's surface.
- They will only hatch if kept at body temperature.
- In contrast, body lice typically lay their eggs in heavily used clothing and bedding. The eggs of body lice will hatch at lower temperatures than head lice nits.

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- Head and body lice nits hatch in 6–9 days. Nymphs look much like adult lice, but they must feed and grow through three molts before reaching the adult stage in approximately 1 week.
- Both nymphs and adults require blood meals for survival. They feed frequently but for only a few minutes at each feeding.
- Adult female head and body lice typically lay several eggs each day. Adults live for about 30 days.

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TREATMENT

- Pyrethrins Plus Piperonyl Butoxide. Natural extracts from the chrysanthemum, (e.g. RID). Neurotoxic to lice. Possible allergic reaction in patients who are sensitive to ragweed, or chrysanthemums. Mostly shampoos that are applied to dry hair and left on for 10 minutes before rinsing out, over a sink rather than in the shower to limit exposure, and with cool rather than hot water to minimize absorption.

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- Not ovicidal (newly laid eggs do not have a nervous system for several days); 20% to 30% of the eggs remain viable after treatment. This necessitates a second treatment after 7 to 10 days.

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- Permethrin (1%) A synthetic pyrethroid, 1% permethrin (e.g. Nix) is currently the recommended treatment of choice for head lice by pediatricians.
- It has a lower mammalian toxicity than pyrethrins.
- Does not cause allergic reactions in individuals with plant allergies.
- The product is a cream rinse applied to hair that is first shampooed with a non-conditioning shampoo and then towel dried. It is left on for 10 minutes and then rinsed off, and it leaves a residue on the hair that is designed to kill nymphs emerging.

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- 20% to 30% of eggs not killed with the first application. It is suggested that the application be repeated if live lice are seen 7 to 10 days later.

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- Lindane (1%) Lindane (e.g. Kwell) is an organochloride that has central nervous system toxicity in humans; several cases of severe seizures in children using lindane have been reported.
- Prescription shampoo that should be left on for no more than 10 minutes with repeated application in 7 to 10 days.
- It has low ovicidal activity (30% to 50% of eggs are not killed), and resistance has been reported worldwide for many years.

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- Malathion (0.5%) The organophosphate (cholinesterase inhibitor) 0.5% malathion (e.g. Ovide).
- Prescription lotion that is applied to the hair, left to air dry, then washed off after 8 to 12 hours.
- Malathion has a high ovicidal activity, but the product should be reapplied if live lice are seen in 7 to 10 days.
- The major concerns are the high alcohol content of the product, making it highly flammable, and the risk of severe respiratory depression.

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