

Pediculosis Corporis

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Introduction

Body lice are parasitic insects that feed on human blood. The three types of lice that feed on humans are the head louse, *Pediculus humanus capitis*, the pubic or crab louse, *Phthirus pubis*, and the body louse. There has been debate amongst entomologists regarding the proper taxonomy of head and body lice, some identify them as two different species, while others group them as a single species. Those considering them as two distinct species identify body lice as *Pediculus humanus*, while those who see them as one species identify them as *Pediculus humanus humanus*. In the medical literature, body lice are often referred to as *Pediculus humanus corporis*, but according to the rules of the International Commission on Zoological Nomenclature, this is an improper designation. [1]

Studies have identified that the head and body lice are closely related, with genetic studies demonstrating that body lice possess only one gene that is not also present in head lice. [2]

Unlike head and pubic lice, body lice do not live on the skin but rather live and lay their eggs in stitchings of clothing or bedding, moving to the skin only to feed. The most significant difference between body and head lice is the distinct ability of body lice to transmit the bacterial diseases of trench fever, relapsing fever, and epidemic typhus to humans. [2]

Etiology

Body lice, which have a worldwide distribution, are ectoparasites that must feed on human blood to survive. They assume 3 forms across their life cycle starting with the egg, or nit, and progressing to the nymph and adult stage. As with head lice, nits are oval and appear yellow or white. However, unlike head lice, which attach their eggs to the proximal hair shafts, body lice lay their eggs in the seams of clothing. A nymph is an immature louse, which except for its smaller size, has the same appearance as an adult louse. Adult lice have 6 legs, are tan to grayish-white in color, 2.5 to 3.5 cm in length, have no wings, and are flat in shape.

Body lice feed 1 to 5 times a day and can live up to 60 days. When separated from a human host, body lice will die within a week.

Epidemiology

As body lice cannot jump or fly, they spread primarily by direct contact, though transmission can also occur through clothing, bed linens, and towels. Infestations are strongly correlated with poor body hygiene, lack of access to clean clothing, and crowded conditions, which facilitate spread of the lice through direct physical contact. Outbreaks most commonly occur in situations where large

groups of people live in unsanitary conditions such as prisons or camps of large groups of refugees from war, famine or natural disasters. In the United States and other developed countries, body lice infestations most commonly occur in homeless populations because of the lack of access to clean clothes or showers. Outbreaks of body lice infestations and louse-borne diseases continue to occur globally and have been documented in jails and refugee camps in central and eastern Africa, rural areas in the Peruvian Andes, and amongst rural populations in Russia. [2]

Pathophysiology

Body lice infestations can involve thousands of mites, each biting an average of 5 times per day. During feeding, body lice pierce the skin, inject a salivary anticoagulant, and then suck the blood meal into their digestive tract. Bites of the body louse can produce a variety of skin lesions, and severe pruritus thought to be due to an allergic and/or inflammatory reaction to the louse saliva. [3] Intense scratching of pruritic bites can result in skin excoriation, potentially leading to significant secondary bacterial infections.

The greatest medical impact of body lice is their ability to transmit bacterial diseases, most notably trench fever caused by *Bartonella quintana*, relapsing fever caused by *Borrelia recurrentis*, and epidemic (louse-borne) typhus caused by *Rickettsia prowazekii*. [4] Trench fever and epidemic typhus are not transmitted by louse bites but rather through infected feces. When feeding, the body louse often excretes its feces onto the skin, which can be inadvertently rubbed into the bite site, eyes, or mucous membranes. Transmission of *Rickettsia prowazekii* can also occur through inhalation of aerosolized fecal dust, which has been documented as a potential source of infection for clinicians. Unlike trench fever and epidemic typhus, transmission of relapsing fever, caused by *Borrelia recurrentis*, does not occur through contaminated feces. Infection occurs when a person crushes an infected louse, and the bacteria then invade the bite site or the skin of the fingers or hand that crushed the louse. [4] In addition, a person can acquire the infection if they rub their eye or put their fingers in their mouth after crushing the louse.

Additional pathogenic bacteria found in body lice include *Salmonella typhi*, *Serratia marcescens*, and *Acinetobacter baumannii*. The DNA of *Yersinia pestis*, which causes bubonic plague, has been identified in body lice, and it is believed they may serve as supplementary vectors for the organism. [1]

History and Physical

Historical clues such as poor body hygiene, lack of access to clean clothing, homelessness, and residing in crowded, unsanitary conditions should prompt consideration for body louse infestation and louse-borne infections

The primary symptom of body lice infestations is severe pruritus.

The dermatologic findings in body lice infestation vary but include areas of pyoderma, erythematous macules, wheals, and hemorrhagic puncta. The severe pruritus associated with bites can cause intense scratching leading to excoriations and the development of secondary infections. In the setting of chronic body lice infestation, frequently bitten areas of the skin can develop notable thickening and discoloration, a condition known as “vagabond’s disease.” [CDC - <https://www.cdc.gov/parasites/lice/body/disease.html>] Dermatologic findings tend to be most prominent in areas where clothing seams are in contact with the skin, such as the waist, groin, thighs, and axillary folds. [3] Additional physical exam findings including cervical lymphadenopathy and conjunctivitis are often present.

Unlike head and pubic lice, infestation with body lice is typically diagnosed by finding eggs and lice in seams of clothing rather than on the skin. [2] Therefore, an important component of the exam in patients suspected of having body lice includes careful inspection of their clothing. In addition to lice, indirect findings such as blood stains or louse feces may be discovered.

Evaluation

While body lice may occasionally be found crawling on the patient's skin, an infestation is typically diagnosed by finding eggs and lice in seams of clothing.

A PCR assay has been developed to differentiate between head and body lice but is primarily used for research purposes rather than to support clinical decision-making.

Treatment / Management

Treatment of body lice does not usually require the use of a pediculicide because improvements in hygiene, including showering and laundering clothing in hot water at least 50 C, will most often eradicate the infestation. [2] All clothing, bed linens and towels should be washed in hot water and machine dried on the hot cycle.

Itching can be treated with topical corticosteroids and systemic antihistamines. Secondary skin infections are managed with appropriate systemic antibiotics. While the use of pediculicides is not required for eradication of body lice infections, they are often utilized, especially if body lice or nits are found on body hair or if there is co-infection with head lice, pubic lice, or scabies. [3] In these cases, pharmacologic treatment employs same agents utilized for pubic and head lice, most commonly permethrin cream applied to the entire body for 8 to 10 hours. Additional treatments include 5% benzyl alcohol lotion, 0.5% ivermectin lotion, 0.5% malathion lotion, 0.9% spinosad topical suspension, and 1% lindane shampoo. [2] Lindane is not recommended for first-line treatment due to a number of potentially serious reactions including neurotoxicity and seizures. In some settings, such as refugee camps with large numbers of people, environmental application of chemical insecticides may be needed to prevent the spread of body lice and louse-borne infections.

Differential Diagnosis

The differential diagnosis of dermatologic findings in body lice infestation includes scabies, contact dermatitis, atopic dermatitis, drug reaction, and viral exanthem. Co-infection with head lice, pubic lice, scabies, and fleas may be found, especially in refugee populations. [3]

A high index of suspicion should be maintained for trench fever, relapsing fever and epidemic typhus in patients with body lice infestation presenting with signs and/or symptoms of systemic infections. Other infectious diseases that may present with similar manifestations include babesiosis, brucellosis, Q fever, typhoid fever, leptospirosis, ehrlichiosis, and tularemia.

Prognosis

The prognosis for the eradication of body lice infestation is very good if patients are provided with regular access to showering and at least weekly access to laundered clothing and bedding.

Significant morbidity and mortality are associated with louse-borne diseases but can be reduced substantially with early recognition and appropriate antibiotic therapy.

Epidemic typhus can cause a vasculitis leading to limb ischemia, gangrene, central nervous system (CNS) dysfunction and multiorgan failure. Mortality ranges from 20% to 40% in untreated patients but decreases to 3% to 4% with appropriate antibiotic therapy.

Louse-borne, relapsing fever mortality rate is approximately 40% if untreated, while the mortality rate with treatment drops to around 4%.

Trench fever, caused by *B. quintana*, tends to be self-limited in immunocompetent people but can result in the development of endocarditis, which can lead to increased morbidity and mortality.

Pearls and Other Issues

Unlike head and pubic lice, body lice do not live on the skin but rather live and lay their eggs in seams of clothing or bedding, moving to the skin only to feed.

The most significant difference between body and head lice is the distinct ability of body lice to transmit the bacterial diseases trench fever, relapsing fever, and epidemic typhus to humans.

Infestations are strongly correlated with poor body hygiene, lack of access to clean clothing, and crowded conditions, and most commonly occur in situations where large groups of people live in unsanitary conditions such as prisons or camps of large groups of refugees from war, famine or natural disasters.

In the United States and other developed countries, body lice infestations most commonly occur in homeless populations who lack access to clean clothes or showers.

Bites of the body louse can produce a variety of skin lesions and severe pruritus which is thought to be due to an allergic and/or inflammatory reaction to the louse saliva.

Infestation with body lice is typically diagnosed by finding eggs and lice in seams of clothing rather than on the skin.

Treatment of body lice does not usually require the use of a pediculicide because improvements in hygiene, including showering and laundering clothing in hot water, will most often eradicate the infestation.

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Image of body lice.

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