Infestations

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Infestation: the presence of animal parasites on or in the body, is common in tropical countries.

- Infestations fall into two main groups:
  1. Those caused by arthropods; and
  2. Those caused by worms.
Lice infestations (pediculosis)

- **Lice** are flattened wingless insects that suck blood, their eggs, attached to hairs or clothing, are known as nits.
- **Features:**
  - Severe itching
  - Followed by scratching and secondary infection
- **2 species**, obligate parasites in humans:
  - **Pediculus humanus**
    - P. humanus *capitis* (head louse)
    - P. humanus *corporis* (body louse)
  - **Phthirus pubis** (pubic louse)
Head lice

- Up to 10% of children
- Peak: 4 - 11 years,
- More common in girls
- Typical infested scalp will carry about 10 adult lice
- **Adult lice**
  - 3–4 mm in length
  - Greyish
  - Hard to find
  - lives for about 1 month and during that time lays 510 eggs per day
- **Nits**
  - Seen easily
  - Firmly stuck to the hair shafts
- **Spread** from person to person
  - Head-to-head contact
  - Shared combs or hats.
Presentation and course

- Itching (may take several months to develop after the first infestation)
  - At first the itching is mainly around the sides and back of the scalp:
  - Later it spreads generally over the scalp.
- Followed by scratching and secondary infection
- **Heavy infestations**, the hair becomes matted and smelly.
- Lymphadenopathy: draining lymph nodes often enlarge.

- **Subsequent infestations** produce itching more rapidly, suggesting that this is due to a delayed-type hypersensitivity reaction.

Complications

Secondary bacterial infection may be severe enough to make the child listless and feverish.
DDx:

- All patients with recurrent impetigo or crusted eczema on their scalps should be carefully examined for the presence of nits.

Investigations:

- None are usually required
- Finding of living moving lice means current and active infestation
- Empty egg (past infestation, need periodic re-inspection)
Treatment

- The finding of **living moving lice** means that the infestation is current and active, and needs treatment
- **Empty egg cases** signify only that there has been an infestation in the past, but suggest the need for periodic re-inspection.

1) **Dimeticone** is a non-neurotoxic agent that coats the lice and suffocates them (applied to dry hair)
2) **Malathion** and **permethrin** (insecticides)
3) **Wet combing with a fine toothed comb** every 3 days for 14 days is an alternative to the treatments

**Further care:**
- ✓ A systemic antibiotic may be needed to deal with severe secondary infection.
- ✓ Pillow cases, towels, hats and scarves should be laundered or dry cleaned.
- ✓ Other members of the family and school mates should be checked.
body lice

- Body lice have diverged genetically from head lice
- Uncommon
- More in the unhygienic and socially deprived
- Like the head louse
- Lays its eggs in the seams of clothing
- Transmission is via infested bedding or clothing.

**Presentation and course**

- Self-neglect is usually obvious;
- Severe and widespread itching, esp. on the trunk.
- The bites are obscured by excoriations and crusts of dried blood or serum.
- Vagabond’s disease
  - Chronic untreated cases
  - Skin becomes generally thickened, eczematized and pigmented
  - Lymphadenopathy is common
DDx:

- **Scabies** >> characteristic burrows are seen.
- Other causes of chronic itchy erythroderma include **eczema** and **Lymphomas** >> but these are ruled out by the finding of lice and nits.

**Investigations:**

- Clothing examined for the presence of eggs in the inner seams.

**Treatment:**

- Treat the infested clothing & bedding (lice & eggs can be killed by high temperature laundering, dry cleaning and tumble drying).
- Less competent patients
  - 5% permethrin cream
  - 1% lindane lotion
Pubic lice (crabs)

- Crabs are broader than scalp and body lice
- Their 2\textsuperscript{nd} & 3\textsuperscript{rd} pairs of legs are well adapted to cling on to hair
- Spread by sexual contact
- Most commonly infest young adults

**Presentation:**

- Severe itching in the pubic area
- Followed by eczematization and secondary infection.
- Small blue–grey macules of altered blood at the site of bites
- The shiny translucent nits are less obvious
- Spread most extensively in
  - Hairy males
  - May even affect the eyelashes
DDX

• Eczema of the pubic area gives similar symptoms but lice and nits are not seen.

Investigations

• The possibility of coexisting sexually transmitted diseases should be kept in mind.
**Treatment**

- Carbaryl, permethrin, and malathion are all effective treatments.
- They should be applied for 12 h or overnight.
- Applied to all surfaces of the body (perianal area, limbs, scalp, neck, ears and face especially the eyebrows and the beard).
- Treatment should be repeated after 1 week.
- The infected sexual partners should also be treated.
- Shaving the area is not necessary.
- Infestation of the eyelashes
  - Hard to treat
  - Applying a thick layer of petrolatum twice a day for 2 weeks
- Patients should avoid close bodily contact until be treated.
Scabies

- Caused by the mite Sarcoptes scabiei var. hominis
- More in poverty, overcrowding and poor hygiene areas
- Adult mites is 0.3–0.4 mm long (visible by lens)
- Transferred from person to person by
  - Close bodily contact
  - Not via inanimate objects
- Fertilized female mites can
  - Move at up to 2 cm/min
  - Burrow through the stratum corneum 2 mm/day.
  - Produce 2-3 oval eggs each day, which turn into sexually mature mites in 2–3 weeks
- Cause of itching (mite itself or it’s products)
Epidemiology

- Scabies is endemic in many developing countries
- In other populations, scabies rises and falls cyclically, peaking every 15–25 years.
- The idea of ‘herd immunity’ has been put forward to explain this, spread being most easy when a new generation of susceptible individuals has arisen. Scabies is most common in the autumn and winter.
Presentation

• For 4–6 weeks after a first infestation there may be no itching, but thereafter it dominates the picture, often being particularly bad at night and affecting several people.

• In contrast, in a second attack of scabies, itching starts within a day or two, because these victims already have immunity to produce the itchy allergic reactions.

• The most dramatic part of the eruption – excoriated, eczematized or urticarial papules – is usually on the trunk.

• Mark feeding spots where the mites were a day or two ago; don’t search for the mite here, don’t search for a moving mite either; they are too small to see.

• Look for burrows where female mites lay their eggs.
- Most **burrows** lie on the
- Sides of the fingers
- Finger webs
- Sides of the hand
- Flexural aspects of the wrists
- Elbows
- Ankles
- Feet (especially in infants)
- Nipples
- **Genitals** (rubbery pink nodules)
- Face (only in infancy)
• Typical **burrows** seen on the side of the thumb.
  • Easily missed
  • Grey–white
  • Slightly scaly
  • Tortuous lines
  • Up to 1 cm in length
1. **Types of lesion:**

*Burrow*, the linear tunnel in which the mite lives. Other skin manifestations include *papules, blisters, nodules*, and *eczematous* changes.

2. **Sites of involvement**

The skin lesions commonly involve *web spaces, flexor surface of wrists, axillae, waist, feet, and ankles*. *Facial* and *palmoplantar* involvement is unique to infantile scabies.

3. **Symptoms:**

*Itching*, which is most severe *at night*.

4. **Other members**

*Other members* may manifest *Scabies*. *Itching* takes approximately *four to six weeks* to develop in others.

The four points to diagnose a case of scabies.
Complications

1. Secondary infection with pustulation is common (Rarely GN)
2. Skin irritation and eczema (repeated applications of scabicides).
3. Persistent itchy red nodules may remain on the genitals or armpits of children for some months after adequate treatment.
4. Venereal disease may be acquired at the same time as scabies.
5. Crusted (Norwegian) scabies
   - May not be itchy
   - Widespread crusted eruption
   - Vast numbers of mites are found
   - It affects people whose immune system cannot control the infestation, usually due to HIV or immunosuppressive drugs
DDx:
- Animal scabies from pets (itchy rash without burrows).
- Cholinergic urticaria
- Lichen planus
- Dermatitis herpetiformis

Investigations:
- Microscopically can be seen:
  - Acarus (picked with a needle from the end of its burrow)
  - Eggs and mites from burrow scrapings mounted in KOH or mineral oil.
- Dermatoscopy a quick and reliable way to find the mite.
Treatment

• Scabies persists indefinitely unless treated. In the chronic stage, the number of mites may be small and diagnosis is difficult. Relapses after treatment are common and can be put down to re-infestation from undetected and untreated contacts.

• Do not treat just the patient: treat all members of the family and sexual contacts too, whether they are itching or not.

• **Scabicides** are applied to the scalp, neck, face and ears as well as to the rest of the skin.

• the preferred treatment is permethrin, with malathion as the second choice

• Topical treatment plus ivermectin (oral) is effective for scabies that does not respond to topical measures alone.
Thank you