

Cutaneous Infestations: Scabies, Pediculosis

Definition

- Scabies - common parasitic infestation caused by the 'itch'-mite: *Sarcoptes scabiei* var. *hominis*
- *Sarcoptes scabiei* var. *canis* (dogs); *Notoedres cati* (cats)

Epidemiology

- More than 300 million cases yearly world wide
- M:F = 1:1
- Common in all ages, all races & socio-economic groups, urban > rural.
- Throughout the year, more in winter

- Overcrowding
- Immuno-compromised
- Poor socio-economic conditions,
- Institutionalized e.g., prisons, mental retardation, old-age homes

The Itch-Mite

- Obligate parasite of humans
 - Fertilized female mite: Ovoid body, flattened dorsoventrally, 300 microns (female), 200 microns (male)
 - Crawls 2.5 mm/day
 - male: dies after fertilization
 - female: lays 40-50 eggs in a lifespan of 4-6 weeks, eggs (ova): mature after several moults
- Eggs → larva → nymph → adults* – [about 10 days for male and 14 day for female]
- Average parasite index: 12 (classical scabies) ??

Transmission

- Skin to skin: predominantly.
- ? Fomites, clothing, furniture-rare
- Sexually transmitted infection (STI)
- Incubation period in new cases : 3-4 weeks
- Symptoms due to *hypersensitivity* to mite and products
- Re-infection- incubation period: symptoms occur almost immediately – as memory T cells are present

Clinical features

- Symptoms
 - Itching- more / severe at night, with skin rash
 - Family members usually also have similar complaints
- Signs
 - Characteristic distribution along the so called *circle of Hebra*: Imaginary circle intersecting the main sites of involvement—axillae, elbow flexures, wrists & hands and genitocrural area

Clinical features

- Papules, vesicles, papulovesicles, scratch marks
- Burrow- classical lesion of scabies- grey-brown line up to 5 mm, seen on webs & genitalia with mite as a black dot at the end
- Burrow may be a dot, dotted line, curve or curved line

Clinical features

- Secondary skin lesions
 - Excoriations
 - Eczematization
 - Nodules
 - Pustules
 - Urticaria?

Clinical types

- Classical Scabies: characteristic distribution of lesions along the circle of Hebra
- Genital Scabies: sexually transmitted
- Incognito: topical / systemic steroids
- Infants: scalp, palms, soles
- Nodular (sensitization): scrotum, penis, elbows, axillary folds
- Animal scabies

Clinical types

- Crusted (Norwegian scabies):
Mentally retarded (*e.g.*, Down's syndrome), neurological impairment / paralysis, immunocompromised / HIV infection / AIDS, leprosy
- Highly infectious
- Severe; itching may not manifest; hundreds to millions of mites may be present; scaling

Complications

- Secondary infection
- Eczematization
- Glomerulonephritis
- Phimosis, Paraphimosis
- Urticaria
- Erythroderma
- Drug reactions: irritation, eczematization

Investigations

- Scraping: from papule, burrow to demonstrate mite, egg,
- Dermatoscopy is useful for detecting burrows and visualizing their contents
- IgE- specific levels
- Newer: Polymerase chain reaction, Immunosorbent assays– not available widely

Treatment-principles

- Treat secondary complications first
- Treat all household members
- Treat all inmates and caretakers in institution
- Treat fomites / clothes by water & detergents (hot water not absolutely necessary)
- Topical scabicides to be applied thoroughly behind ears and from neck to toes; in infants: on scalp & face if involved
- Repeat application depending upon scabicides used

First-line therapies

- Topical permethrin 5%
- MoA- Impairs function of voltage-gated sodium channels in insects, leading to disruption of neurotransmission
- Applied for 8 to 14 hours (overnight)
- II application- one to two weeks later- the relative efficacy of one versus two applications of permethrin not studied
- ADR- Generally well tolerated; skin irritation

Oral ivermectin

- Advantage of ease of administration
- 200 mcg/kg single dose, repeated after two weeks
- MoA- Act by interrupting glutamate & GABA-induced neurotransmission causing paralysis & death
- Lacks ovicidal action
- Better with eczematized patients, in crusted scabies
- CI- < 5 years (<15 kg body wt); >60 years
- Pregnancy cat. C

Crusted scabies

- Topical 5% permethrin or topical 5% benzoyl benzoate applied daily for seven days, then twice weekly until cure

AND

- Oral ivermectin (200 mcg/kg/dose) given on days 1, 2, 8, 9 and 15

[Severe infestations- two additional doses (given on days 22 and 29)]

Supportive treatment

- Antihistaminics
- Antibiotics: systemic, local
- Emollients
- Acaricidal soaps (permethrin)??
- Steroids: Topical (in eczematized / nodular scabies)
- Keratolytics in crusted scabies

Failure of treatment

- Improper treatment (clothing, underneath the nails)
- Poor compliance
- House hold and/or institutional contacts not treated
- Resistance to drugs (lindane etc.)

Causes of itching even after treatment

Itching persists for few days even after successful treatment

- Re-infection / relapse
- Eczematous reaction
- Contact irritation sensitization to acaricidal drugs
- Scabetic nodules
- Other skin problems

Pediculosis

- Types:
 - *Pediculus capitis* -head louse
 - *Pediculus humanus* -body louse
 - *Pthirus pubis*- pubic/crab louse
- Morphology:
 - Head louse & body louse morphology identical (Thin & long)
 - Crab louse (broad & short)

Normal Habitat

- Pediculosis capitis:
 - Scalp hair of host
 - Children, Females>males
- Pediculosis corporis:
 - Clothing close to skin of host
 - Vagabond's disease* - pigmentation of the skin caused by long continued exposure, uncleanliness, and especially by scratch marks and other lesions due to the presence of body lice

- Phthiriasis :
- Pubic, axillary, beard hair, eyebrows; eyelashes; hair of trunk & limbs; rarely scalp margins.
- Sexually active young adults; in children due to sexual abuse or parental contact.

Clinical features

Pediculosis capitis:

- Scalp pruritus
- Detection of nits / adults lice on scalp hair
- Secondary bacterial infection
- Cervical lymphadenopathy
- Matting of hair with pus and exudate - *plica polonica*
- Eczematization- neck /generalized

Clinical features

Pediculosis corporis:

- Body pruritus
- Detection of nits / lice on clothing
- Secondary bacterial infection
- Postinflammatory hyperpigmentation of skin

Phthiriasis:

- Nocturnal pruritus
- Detection of nits & louse on affected hair
- Blue grey macules (*maculae caerulae*) / Rust coloured speckles on skin

Pediculocides

Head lice: Topical treatment:

Drug	Dose	Remark
Permethrin lotion, 1%	10 minutes	II application - day 9
Malathion 0.5% lotion	8-10 hr / 20 minutes	Repeat after 10 days
Lindane 1%	4-5 minutes	2 applications (9-10 days)
Ivermectin lotion, 0.5%	10 minutes	Wash after 24 hours

- Ivermectin 200-400 mcg/kg on day 1, 8 & 15
- Cotrimoxazole- kills the symbiotic bacteria in the gut of the louse or a direct toxic effect on the louse

Body louse

- Difficult
- The most important treatment- disinfestation of all clothing & bedding
- Beds should be burned or sprayed with lice sprays- louse may lay eggs on the seams of the mattress etc.
- The patient should be treated from head to toe with a topical insecticide or given oral ivermectin

Pediculosis pubis

- Shaving- not curative as the louse will go to another hairy area of the body
- Crab lice are treated with the same topical therapy as that for pediculosis capitis

Pediculosis : Treatment

Pediculosis / Phthiriasis:

- Good hygiene
- Treatment of patients & contacts.
- Removal of nits & lice with comb, vinegar, application.
- Eyelash infection (phthiriasis palpebrum):
Mechanical removal, Epilation, Topical agents