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Itchy skin diseases often produce similar skin lesions despite varying aetiology and animal species. This presentation will cover the most common causes of itch in birds, small pet mammals, and reptiles. A sound diagnostic approach will be emphasised, aiming to reach a diagnosis and maximise chances of successful treatment. A thorough history is vital, including signalment, husbandry (housing, bedding, temperature, humidity, ventilation, cleaning, population density, diet, feeding frequency); skin disease details (duration, initial lesions, apparent pruritus, treatment, response, previous disease); and general health. The clinical examination follows, with a full physical and detailed skin examination. Primary lesions (e.g. papules, pustules) are more useful diagnostic clues, and higher yield for diagnostic testing, than more frequent secondary lesions (e.g. excoriations, scaling, crusting). Next comes a prioritised list of differential diagnoses; guiding the most appropriate diagnostic tests or trials and their priority. It can help to categorise differentials based on their typical presentation; however always consider atypical presentations.

1. Skin Diseases with Severe Itch +/- Self-Trauma (alopecia, excoriations, erosions, crusts). Itch is the major presenting complaint. Severe self-trauma can occur. The major differential is ectoparasites. Most are highly contagious, although disease is variable; often some in-contact pets are normal. Allergies and other diseases occur far less commonly.

Sarcoptid mites
Severe itch causes excoriations, patchy/regional alopecia, scale, crusts.
- Guinea pig *Trixacarus caviae*: Extremely common. Affects dorsal neck and thorax; face; or more generalised. Also reported rarely in the Hamster.
- Ferret *Sarcoptes scabiei*: Uncommon. Affects face, pinnae, ventrum; +/- legs, feet (swelling, erythema, crusting, dystrophic claws, pododermatitis).
- *Sarcoptes scabiei*, *Notoedres muris* rare in Rats, Mice, Guinea pig, Hamster, Rabbit

Fur mites
Typical lesions are patchy alopecia +/- mild excoriations.
- Mice *Myobia musculi* most common; may cause severe self-mutilation. Affects face, pinnae, neck, shoulders. *Myocoptes musculus* less pruritic; affects back and ventrum.
- Rats. *Radfordia ensifera* and rarely *Myobia musculi*

Ear mites
Often cause severe head shaking and ear scratching. Occasionally produce alopecia and excoriations on face, neck, and trunk.
- Rabbit *Psoroptes cuniculi* very common
- Ferret *Otodectes cynotis* common. Occasional in Mice.

Allergies (hypersensitivities)
Are rare in most exotic pets. Flea hypersensitivity is common in Ferrets (pruritic papular dermatitis on rump, caudal body); and atopy suspected rarely. A facial allergic or irritant contact dermatitis to cedar or pine shavings is reported in Hamsters. Atopy may cause feather picking in Birds; pruritus is difficult to identify; if picking focused (at small areas) or aggressive may suggest real pruritus.

**Hormonal Disease**
Hyperadrenocorticism (HAC) is very common in Ferrets; with moderate to intense pruritus on dorsum in ~ 30%. Affects neutered animals of either sex; median age of 4yrs (2-8yrs). Bilaterally symmetrical alopecia begins at tail/tailbase, and progresses to caudal trunk/hind legs. Other signs may occur (vulval swelling, male sexual behaviour, lethargy, muscle atrophy). Hyperoestrogenism is a non-pruritic differential.

**Other**
Immune-complex vasculitis is reported rarely in Mice (extreme pruritus, crusts, ulcerations on dorsal neck, shoulders. Pinworms can produce perianal pruritus in Mice.

**Prioritised Diagnostic Tests (Severely Itchy Patient):**

i) **Skin scrapings**
Sarcoptid mites live superficially (“burrow”, but only in the epidermis) so only superficial scrapings required (not to capillary “oozing”); mostly plentiful; *T. caviae* may be sparse. Collect ample surface scale, especially from papules, and scaly areas.

ii) **Tape preparations**
Higher yield for surface dwellers (fur mites). Clear acetate (e.g. Scotch®) tape pushed firmly onto skin/fur; over large areas for potentially sparse mites.

iii) **Examination of ear exudate**
Rabbits, Ferrets: Collect wax, debris from ear canals, mix with paraffin oil, examine microscopically. Mites are large; visible on otoscopic exam. Secondary bacterial otitis is common (Diff Quik stain).

iv) **Mite treatment trials**
are indicated if negative scrapes/tapes in itchy Mice, Guinea pigs (mites may be sparse). Vital to treat all in-contact animals. See treatment tips.

v) **Abdominal palpation & ultrasound**
in Ferrets with HAC: enlarged adrenal glands palpable in ~30%; 80% enlarged left adrenal; 16% bilateral

vi) **What if all above tests +/- treatment trials, are negative?**
Consider typically less-pruritic diseases (e.g. dermatophytosis in Guinea pigs will occasionally be very pruritic); however irritants, hypersensitivities, or unusual rare diseases become more likely.

   a. Skin biopsies are ideal. May support diagnosis (e.g. atopic dermatitis); rule out differentials (e.g. dermatophytosis); confirm diagnosis (e.g. vasculitis).
   b. Patch testing for contact allergy is difficult. Provocative testing of suspect material (removal then reintroduction) is often more practical. Resolution takes up to 2wks.
   c. Intradermal allergen testing (IDT) Used in Birds with suspected atopy to identify important allergens for allergen avoidance or immunotherapy. Difficult to perform and interpret in birds (limited body surface, thin skin, weak/short-lived reactions).

2. Skin Diseases with Mild to Moderate Itch and Patchy Alopecia.

Patchy poor coats are often a feature. Itch is present but not severe; self-trauma lesions are minor or absent. A wide variety of differentials are possible, including less severe forms from group 1. Surface dwelling mites are more likely with this presentation. They are contagious; however often present in low numbers in normal animals. Heavy infestations or hypersensitivity produces disease, with mild patchy alopecia, scaling, and erythema common.

Cheyletiellosis (C. parasitovorax):
    Very common in Rabbits; also occurs in Guinea pigs. Lesions (including greasiness) typically on the dorsum, ventral abdomen, and maybe face.

Fur/Feather/Scale Mites
    Itch is typically mild or absent, unlike with fur mites in rodents.
    • Rabbit Leporacarus [listrophorus] gibbus: lesions rare
    • Guinea pigs (Chirodiscoides caviae): dorsolateral lumbosacral area
    • Birds Protolichus, Dubininia spp. (in budgies); Dermoglyphus spp. (quill mites; in chickens, canaries). Visible with magnification on feathers.
    • Reptiles Ophionyssus matricis (black or tan mite) most common, especially in snakes; Hirstiella spp. (red mite) in lizards, and Trombiculid spp. (environmental). Pruritus is not easily recognised; suggested by behaviour changes e.g. laying in water longer (snakes); rubbing against items. Dysecdysis (poor skin shedding) may occur. Mites are large and visible; often at protected sites (e.g. skin folds under chin, under scutes, periocular, cloacal folds, tympanic recesses in lizards).

Sarcoptid mites Cnemidocoptes spp:
    Common in Birds e.g. Budgerigars (scaly face); Canaries (scaly legs). Excessive scaling and minimal itch are most common; may have body itch and feather picking. Possible genetic link with severe infestations.

Lice
    Heavy infestations are more likely in multiple animal colonies; young, old, or debilitated animals; poorer environmental conditions.
    • Mice, Rats Polyplax spp. (sucking lice): dorsum and neck
• Guinea pigs Gliricola porcelli & Gyropus ovalis (biting lice): behind ears, neck, dorsum
• Rabbits Haemodipsus ventricosus (sucking lice): dorsum, lateral trunk, perineal
Endoparasites Giardia infection reported with feather picking in cockatiels.

Normal physiological hairloss
Seasonal fur/feather shedding in small mammals and Birds may produce patchy areas of alopecia, particularly in older animals. Plucking for normal nesting behaviour also occurs. Birds can pluck feathers from the chest, abdomen, legs (“brood patches”) for egg incubation. Rabbits can pluck from the ventral abdomen. Hair/feathers regrow normally; seasonal recurrences occur.

Environmental factors
Should be considered. A thorough history is vital. Mechanical trauma (rubbing on cage bars, feeders; burrowing in abrasive bedding) may cause facial hair loss in Mice, Gerbils (“bald nose” syndrome). A behavioural component is proposed.
Artificial factors Irritant substrates and low humidity may cause mild irritation and surface scaling in small mammals. Abnormal light cycling (artificial lighting) and lack of fresh air/rain (to encourage normal preening) may be involved in Bird feather picking.

Dietary deficiencies (rare)
May cause dull dry coats, and symmetrical alopecia.
• Ferrets Low fat or protein diets; biotin deficiency (excessive raw egg white) common.
• Hamsters Low protein diets (<16%) rare.
• Birds Poor diets, chronic disease may cause poor feather development.

Indicated Diagnostic Tests (Itchy Patient with Patchy Coat):

i) Tape Preparations (see above) can be higher yield than skin scrapings for fur mites, & other superficial dwellers, including lice. May need to lift scales in reptiles.
ii) Skin scrapings (superficial): for Cnemidocoptes spp. and other sarcoptid mites.
iii) Ensure thorough history, than as per group 1.

3. Skin Diseases with Mild to Moderate Itch and Prominent Alopecia +/- Scaling.

Obvious areas of alopecia, often with well-demarcated borders are present. Itch is typically mild or absent. Some diseases discussed here do not produce pruritus; however they are important differentials, as even when present, pruritus may be unapparent.

Dermatophytosis
Is common in Guinea pigs, Rabbits; rare in Rodents, Hamsters, Gerbils, Ferrets. Pruritus ranges from absent, to occasionally severe. *Trichophyton mentagrophytes* is the most common species; most are zoonotic. Typical sites: neck, back, tail base in Rats; face (nasal bridge, eyelids, pinnae), feet in Mice (as for barbering).

**Demodicosis**
Is very rare except in Hamsters; typically older, immunosuppressed animals affected. Pruritus is often absent. Also occurs in Guinea pigs, Gerbils.

**Superficial Bacterial Pyoderma**
Is relatively rare in exotics. It may complicate barbering in Mice & Rats. It is frequent in pododermatitis of Guinea pigs (non-pruritic).

**Behavioural problems**
Repetitive over-grooming commonly produces alopecia in many exotics. It is most common in groups, especially young submissive animals, caused by dominant females (Mice) or males (Guinea pigs). It is exacerbated by crowding, stress, and boredom. Single animals may sometimes self-barber producing alopecia in reachable areas (head, neck, anterior shoulders unaffected). Pruritus is absent.

- Barbering (fur/whisker trimming) is common in Mice, Rats, Guinea pigs; rare in Rabbits, Gerbils, Hamsters. Complete alopecia occurs; typically on the head (muzzle, periocular, whiskers); less commonly the rump, tail, or perineum. Rabbits: patchy broken hairs; head, back. Hamsters, sometimes Guinea pigs: bite wounds.
- Behavioural Feather picking is common in caged birds, especially psittacines (*African Grey Parrot, Macaw, Gang Gang, Rosella, Galah, Corella*); mainly single caged birds; also groups in aviaries. Normal healthy feathers remain on the head; with feather loss and/or mutilation in body areas easily reached by the beak (wing skin fold [propatagium or wing web], medial thighs, sternum [proventer region]). Broken feathers (ragged irregular appearance; ramus split longitudinally) are common. Flight and tail feathers are often affected first. In severe cases, underlying skin can be damaged.

**Telogen Defluxion**
Synchronisation of hair follicles in telogen (resting) phase occurs, 2-3 months after stressful events (illness, surgery) or with pregnancy/lactation. Sudden shedding of hairs produces prominent areas of complete alopecia (often lumbosacral area, flanks). Common in Rabbits; occurs in Ferrets, Guinea pigs. Pruritus is absent.

**Neoplasia**
Epitheliotropic lymphoma is reported rarely in Rabbits, Ferrets, Hamsters typically older animals; often mimicking other diseases. Presentation is variable; alopecia and scaling are often prominent; nasal/footpad depigmentation occurs. Pruritus is variable.

**Indicated Diagnostic Tests (Alopecic Patient +/- Apparent Itch):**
i) **Trichogram** Pluck hairs (periphery of lesions); examine microscopically on paraffin oil
   on glass slide. Broken/thickened hairshafts with fungal spores/hyphae indicate dermatophytosis. May find *Demodex* spp. (skin scrapings more sensitive). Broken hairshafts may indicate external trauma (barbering or pruritus)’ gently tapered hairs suggest shedding. Detect if mainly telogen (e.g. telogen defluxion) or anagen hairs.

ii) **Tape Preparations** Often higher yield for dermatophytosis (broken hairs +/- scale with spores/hyphae); superficial pyoderma (neutrophils, intracellular bacteria); may reveal squamous forms *Demodex* mites (e.g. *D. criceti* in Hamsters).

iii) **Skin scrapings** (deep, to capillary oozing) are important for *Demodex* mites.

iv) **Fungal culture** Vital if dermatophytosis suspected. Hairs/scale from periphery of lesions or tooth brush samples collected. DTM media or ideally Sabouraud's agar used.

v) **Exclusion of other diseases** is vital to confirm behavioural over-grooming, especially in birds, when initial dermatologic tests negative. A variety of internal tests are indicated:
   a. faecal floatation/gram stain; FBC, MBA, plasma protein electrophoresis
   b. scanning radiographs
   c. viral testing - psittacine beak and feather disease, polyomavirus

vi) **Skin biopsies** (including bird feather follicles) help rule out other differentials (e.g. for behavioural over-grooming: usually normal skin, with no inflammation); and are essential for neoplasia and other rare diseases e.g. sebaceous adenitis in Rabbits.

**Treatment Tips**

Readers are referred to texts for full treatment details.

**Ectoparasites**
Vital to treat all in-contact animals (even if no clinical signs) + beyond mite life-cycle (e.g. every 1-2wks for 4-6wks). Ivermectin 200-400ug/kg s/c is very effective for deeper dwelling and blood sucking parasites; however less effective for surface dwellers e.g. fur mites. Fipronil spray (off-label) is the author’s preferred miticidal treatment for superficial and surface mites in all species EXCEPT in RABBITS (DO NOT USE). Dose carefully by bodyweight. Effective, easy, inexpensive, safe (Take care to keep warm & in well-ventilated space until dry) Alternatives: Selamectin for rabbits; permethrin for rodents.

**Dermatophytosis**
0.2% enilconazole dip (Imaverol®) wkly until beyond resolution; 2% lime sulphur if available (not in Australia)
Inappropriate environmental conditions
  e.g. boredom, overcrowding, poor substrates, incorrect temperature, humidity,
  diet are often important to correct.

Common Pruritic Dermatoses in Small Exotic Mammals

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References

Dermatoses of Pet Rodents, Rabbits and Ferrets. In: Muller & Kirk's Small Animal Dermatology. 6th Ed. Eds:
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