PAPULONODULAR DERMATOSES
(SKIN DISORDERS CHARACTERIZED BY THE PRESENCE OF BUMPS OR SMALL MASSES)

BASICS

OVERVIEW
• "Papulonodular" refers to the presence of papules and nodules; "dermatosis" (plural, "dermatoses") is the medical term for any skin abnormality or disorder
• "Papules" are small, raised skin lesions of the skin; "nodules" are small, solid masses of the skin

SIGNALMENT/DESCRIPTION of ANIMAL

Species
• Dogs and cats

SIGNS/OBSERVED CHANGES in the ANIMAL
• Depend on underlying cause
• Hair loss (known as "alopecia")
• Reddened skin (known as "erythema")
• Small, raised skin lesions (papules)
• Small, solid masses of the skin (nodules)
• Small, raised skin lesions containing pus (known as "pustules")
• Itchiness (known as "pruritus")
• Skin lesions may be localized or generalized

CAUSES
• Bacterial folliculitis (superficial and deep bacterial infections of the hair follicles)
• Dermatophytosis (a fungal infection affecting the skin, hair, and/or nails)
• Sebaceous adenitis (inflammation of the sebaceous glands, the glands that produce oils in the hair coat)
• Sterile eosinophilic pustulosis (skin disorder characterized by the presence of eosinophils in sterile pustules; "eosinophils" are a type of white-blood cell; they are involved in allergic responses by the body and are active in fighting larvae of parasites)
• Canine and feline acne
• Kerions (raised nodular lesions that develop from fungal infections of the skin, which frequently ooze)
• Demodectic mange (known as "demodicosis")
• Rhabditic dermatitis (skin inflammation caused by parasitic infestation [*Pelodera strongyloides*] in the skin)
• Actinic or sun/solar-related skin conditions
• Cutaneous histiocytosis (condition characterized by the proliferation of histiocytes, a type of scavenging cell, in the area of blood vessels in the skin)
• Cancer

RISK FACTORS
• Inflammation/infection of the hair follicles (folliculitis), fungal infection of the skin, hair, and/or nails (dermatophytosis), and demodectic mange (demodicosis)—any disease or medication that causes a decrease in the ability to produce a normal immune response (known as "immunocompromise") increases likelihood of these skin disorders
• Rhabditic dermatitis—may be associated with contact with decaying organic debris (such as straw or hay) containing the parasite, *Pelodera strongyloides*
• Actinic or sun/solar-related skin conditions—seen more frequently in outdoor, short-haired dogs living in areas with ample sunlight

TREATMENT

HEALTH CARE
• Most can be treated as outpatients
• Generalized demodectic mange (demodicosis) and secondary generalized bacterial infection (known as "sepsis") require hospitalization
• Some cases with skin cancer may require inpatient treatment

ACTIVITY
• Alteration of activity usually not necessary

DIET

- Alteration of diet usually not necessary

SURGERY
- Skin biopsy may be necessary to determine diagnosis
- Surgical removal of skin tumors/cancer

MEDICATIONS AND TREATMENT

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

Bacterial Infection of the Hair Follicles (Bacterial Folliculitis)
- Superficial skin infection characterized by the presence of pus (known as "superficial pyoderma")—appropriate antibiotics based on bacterial culture and sensitivity testing should be given for at least 3 to 4 weeks or 1 week beyond resolution of clinical signs
- Deep skin infection characterized by the presence of pus (known as "deep pyoderma")—appropriate antibiotics based on bacterial culture and sensitivity testing should be given for at least 6 to 8 weeks or 2 weeks beyond resolution of clinical signs

Inflammation of the Sebaceous Glands, the Glands that Produce Oils in the Hair Coat (Sebaceous Adenitis)
- Apply a 50% to 75% mixture of propylene glycol and water once daily as a spray to affected areas or apply baby oil weekly, as directed by your pet's veterinarian
- Essential fatty acid dietary supplements and evening primrose oil, as directed by your pet's veterinarian
- Cases that do not respond to treatment—isotretinoin; if response is seen, taper dosage as directed by your pet's veterinarian (synthetic retinoids have become difficult to dispense due to very strict prescription procedures)
- Cyclosporine (medication to decrease the immune response) has been used
- Most cases do not respond to steroids

Canine and Feline Acne
- Underlying causes should be identified and treated accordingly
- May resolve without therapy in mild cases
- No underlying cause found—Stri-Dex® pads or benzoyl peroxide gels used daily or alternated daily, as directed by your pet's veterinarian
- More severe cases—benzoyl peroxide has strong action to soften and loosen crusts and scales on the skin (known as "keratolytic action"), destroys bacteria or slows their growth and multiplication (known as an "antimicrobial property"), and flushes out the hair follicles; benzoyl peroxide shampoos and gels every 24 hours until lesions resolve, then as needed
- Mupirocin—antibiotic applied to the skin directly (known as a "topical antibiotic"); apply every 24 hours or alternate with the benzoyl peroxide products; should not be used in cats with deep lesions
- Cases that do not respond to treatment—antibiotics administered by mouth or injection (known as "systemic antibiotics")
- Recurrent or very deep infection (furunculosis)—systemic antibiotics (administered by mouth or injection) and warm water soaks; "furunculosis" is a very deep bacterial infection leading to rupturing of the hair follicles
- Cases that are very resistant to treatment—tretinoin or isotretinoin applied to the skin directly (topical therapy); the synthetic retinoids intended to be administered by mouth (oral administration) have become difficult to dispense due to very strict prescription procedures
- Cats can be sensitive to the irritant effects of benzoyl peroxide

Rhabditic Dermatitis (skin inflammation caused by parasitic infestation [Pelodera strongyloides] in the skin)
- Remove and destroy bedding (adult parasites live in decaying organic material, such as straw)
- Wash kennels, beds, and cages and treat with a premise insecticide or flea spray, as directed by your pet's veterinarian; always read labels on insecticides and follow instructions carefully
- Bathe affected animal and remove dried discharges on the surface of the skin lesions (known as "crusts")
- Parasiticidal dip—at least 2 times at weekly intervals
- Severe infection—antibiotics may be necessary

Actinic or Sun/Solar-Related Skin Conditions
- Sunlight—avoid between 10 a.m. and 4 p.m.; apply sunscreen with SPF rating of at least 15 every 12 hours
- Severe inflammation—steroids applied directly to the affected skin (topical therapy) or administered by mouth may provide comfort; topical, 1%–2.5% hydrocortisone usually sufficient; systemic, prednisone by mouth
- Secondary infection—antibiotics may be necessary
- Squamous cell carcinoma (type of skin cancer)—prognosis is guarded to poor, depending on the stage of disease; therapy includes synthetic retinoids, heating of the tissues using radiofrequency waves (known as "radiofrequency hyperthermia"), freezing of the tissues (known as "cryosurgery"), use of a light sensitive drug, which is activated by certain light waves (known as "photochemotherapy"), radiation therapy, and surgical removal

Sterile Nodular Dermatoses

• Cyclosporine (medication to decrease the immune response)—no food 2 hours before or after dosing; taper according to response as directed by your pet's veterinarian
• Tetracycline (an antibiotic) and niacinamide combinations
• Steroids at doses to decrease the immune response; taper according to response as directed by your pet's veterinarian
• Chemotherapeutic drugs (chlorambucil or azathioprine)

Other Papulonodular Dermatoses

• Dermatophytosis—antifungal medications; may be administered by mouth or applied to the skin directly (topical therapy)
• Sterile eosinophilic pustulosis—steroids, prednisolone or prednisone
• Other papulonodular dermatoses treated based on underlying cause

FOLLOW-UP CARE

PATIENT MONITORING

• Blood work (complete blood count [CBC] and serum chemistry screen) and urinalysis—get baseline results, then repeat tests every 3 months for patients receiving cyclosporine
• Blood work (complete blood count [CBC] and serum chemistry screen) and urinalysis—monitor monthly for 4 to 6 months for patients receiving synthetic retinoid therapy
• Tear production—monitor monthly (perform Schirmer tear test) for 4 to 6 months, then every 6 months in patients receiving synthetic retinoid therapy
• Skin scrapings—monitor therapy in patients with demodectic mange (demodicosis)
• Repeat fungal (dermatophyte) cultures—monitor therapy in patients with fungal infection affecting the skin, hair, and/or nails (dermatophytosis)
• Monitor progress of resolution of lesions

PREVENTIONS AND AVOIDANCE

• Depend on underlying cause

POSSIBLE COMPLICATIONS

• Actinic or sun/solar skin conditions may progress to squamous cell carcinoma (type of skin cancer)

EXPECTED COURSE AND PROGNOSIS

• Depend on underlying cause

KEY POINTS

• Fungal infection affecting the skin, hair, and/or nails (dermatophytosis)—contagious to humans in 30% to 50% of cases of *Microsporum canis*; if a family member develops skin lesions, seek medical attention