

Squamous Cell Carcinoma of the Skin

(a Type of Skin Cancer)

Basics

OVERVIEW

- The “squamous epithelium” is the top layer of the skin, which is composed of flat, scale-like cells
- Squamous cell carcinoma is a cancer (malignant tumor) of squamous epithelium of the skin
- “Actinic” refers to conditions caused by exposure to the sun (solar exposure)
- Sun-induced (actinic) squamous cell carcinoma is more prevalent in sunny climates and high altitude environments, due to high ultraviolet light exposure
- Multicentric squamous cell carcinoma in situ (MSCCIS) or Bowen's-like disease (cats)—multiple cancerous skin lesions, involving pigmented skin in areas with hair

GENETICS

- Unknown

SIGNALMENT/DESCRIPTION OF PET

Species

- Dogs
- Cats

Breed Predilections

- Dogs—Scottish terriers, Pekingese, boxers, poodles, Norwegian elkhounds, Dalmatians, beagles, whippets, and white English bull terriers may be more likely than other dog breeds to develop squamous cell carcinoma of the skin
- Cats—none reported; affected pets often have light or unpigmented skin; Siamese are less likely to have sun-induced squamous cell carcinoma, probably due to their protective pigment

Mean Age and Range

- Dogs—8 years of age
- Cats—9 years of age, range 2–16 years of age for the actinic form of squamous cell carcinoma; 10 years (range, 7–17 years of age for multicentric squamous cell carcinoma in situ MSCCIS) or Bowen's-like disease

SIGNS/OBSERVED CHANGES IN THE PET

- Dried discharge on the surface of a skin lesion (known as a “crust”); superficial loss of tissue on the surface of



the skin, frequently with inflammation (known as an “ulcer”); or mass that may have been present for months and unresponsive to conservative treatment

- Multicentric squamous cell carcinoma in situ (MSCCIS) or Bowen's-like disease (cats)—skin becomes pigmented; ulcer forms in the center; followed by a painful scabby lesion that may expand peripherally
- Lips, nose, and ear flap (pinna) involvement—may start out as a shallow crusting lesion that progresses to a deep ulcer
- Facial skin involvement (cats)

Physical Examination

- Rapidly growing lesion (known as a “proliferative lesion”) or lesions with loss of surface tissue (erosive lesions) are most common in the cat
- Cats—most common sites for sun-induced (actinic) lesions the tough, hairless skin of the nose (known as the “nasal planum”), eyelids, lips, and ear flap (pinna); multicentric squamous cell carcinoma in situ (MSCCIS) or Bowen's-like disease may occur in any location, unrelated to sun exposure or skin pigmentation; may note 2 to more than 30 cancerous lesions on the head, digits, neck, chest, shoulders, and lower abdomen; hair in the lesion pulls out easily; crusts (dried discharge) cling to the hairs
- Dogs—most commonly affects toes, scrotum, nose, legs, and anus

CAUSES

- Ultraviolet irradiation (actinic form), due to exposure to the sun
- Recent studies show an association with papillomaviruses in squamous cell carcinoma in cats (in about 50% of samples) and in dogs

RISK FACTORS

- Sunny climates and high altitudes (high ultraviolet light exposure)
- Prolonged exposure to ultraviolet light
- Light or non-pigmented skin
- Previous thermal injury—burn scar
- Risk factors for multicentric squamous cell carcinoma in situ (MSCCIS) or Bowen's-like disease in cats are undetermined, but may be associated with conditions that lead to an inability to develop a normal immune response (known as “immunosuppression”)

Treatment

HEALTH CARE

- Superficial tumors—suspected to be sun-induced; wide surgical removal (excision) may be locally curative; other treatment options include freezing the tissue to destroy it (known as “cryosurgery”); using light energy to destroy tissue (known as “photodynamic therapy”); or radiation treatment
- Invasive tumors are tumors that extend into deeper tissues (that is, they involve more than the surface of the skin)—inpatient; require aggressive surgical removal (excision) or radiation therapy post-surgery, or for those not in an area that allows surgical removal
- Multicentric squamous cell carcinoma in situ (MSCCIS) or Bowen's-like disease in cats—may be treated with surgery for local control; however, most cats develop new lesions in other sites; treatment with immunomodulating drugs (imiquimod) may be most effective
- Topical synthetic retinoids—retinoids are chemicals with vitamin A activity; may be useful for early sun-induced superficial lesions
- Chemotherapy—recommended for cases where the tumor is incompletely removed surgically; the tumor cannot be removed surgically (excised); and for cases with spread of the cancer (known as “metastasis”); chemotherapy agents include cisplatin (dogs only), carboplatin, and mitoxantrone
- Electrochemotherapy (bleomycin) shows promise in a pilot study; not routinely available
- Pain relievers (known as “analgesics”), as needed
- Secondary skin infections—antibiotic therapy

ACTIVITY

- Dictated by the location of the tumor and the type of treatment
- Generally limited activity, until sutures are removed, if surgery has been done

DIET

- Normal
- Feeding tube may be necessary with surgical removal of cancer involving the tough, hairless skin of the nose (nasal planum)

SURGERY

- Wide surgical excision (that is, surgically removing the tumor and wide borders of apparently normal tissue)—treatment of choice for invasive and sun-induced tumors; skin flaps and body wall reconstruction sometimes required; invasive tumors are tumors that extend into deeper tissues (that is, they involve more than the surface of the skin)

Medications

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

- Imiquimod 5% cream for multicentric squamous cell carcinoma in situ (MSCCIS) or Bowen's-like disease—apply to the skin lesion(s) (known as “topical application”); most cats respond, but develop new lesions in other sites; these lesions often subsequently respond to topical treatment
- Chemotherapy—recommended in cases with surgery in which cancer or cancer cells remain (known as “incomplete surgical excision”); with inoperable tumors (that is, tumors that cannot be removed surgically); and with spread of the cancer to other parts of the body (known as “metastasis”)—cisplatin (dogs), carboplatin, and mitoxantrone—reported to induce partial and complete remission; generally remission is of short duration
- Topical synthetic retinoids—retinoids are chemicals with vitamin A activity; may be useful for early sun-induced superficial lesions, may be irritating to the skin

Follow-Up Care

PATIENT MONITORING

- Routine bloodwork (complete blood count [CBC] and serum biochemistry panel) will be evaluated during medical treatment with chemotherapy or imiquimod cream
- Physical examination at one month after resolution of tumor, then every 3 months after treatment, or if owner thinks tumor is recurring
- Chest x-rays (radiographs) and lymph-node evaluation at each 3-month recheck examination to evaluate possible spread of the cancer (metastasis) into the lungs; abdominal x-rays (radiographs) or ultrasound, if the lesion is on the rear part of the pet

PREVENTIONS AND AVOIDANCE

- Limit sun exposure, especially between the hours of 10:00 a.m. and 3:00 p.m.
- Tattoos on non-pigmented areas may be helpful

EXPECTED COURSE AND PROGNOSIS

- Prognosis—good with superficial lesions that receive appropriate treatment; guarded with invasive tumors that extend into deeper tissues (that is, they involve more than the surface of the skin), advanced stage of disease, or recurrent lesions

Key Points

- Early diagnosis and treatment for squamous cell carcinoma of the skin is important
- Risk factors associated with the development of the tumor include sunny climates and high altitudes (high ultraviolet light exposure)

- Limit sun exposure, especially between the hours of 10:00 a.m. and 3:00 p.m.
- Prognosis—good with superficial lesions that receive appropriate treatment; guarded with invasive tumors that extend into deeper tissues (that is, they involve more than the surface of the skin), advanced stage of disease, or recurrent lesions
- Most cats (75%) with multicentric squamous cell carcinoma in situ (MSCCIS) or Bowen's-like disease will develop new lesions in other sites of the skin

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