Solar dermatitis (ie, sunburn) is caused by direct UVL injury to skin cells, with severity related to duration and intensity of sun exposure; this is not the same as the thermal burn that can occur in darkly pigmented and/or dark-haired body regions exposed for extended lengths of time to strong sunlight. Canine solar dermatitis (Figure 1) frequently occurs on the dorsal muzzle (nasal) and ventrum (truncal), although any poorly pigmented or unpigmented skin with prolonged sun exposure is predisposed. Nasal lesions begin as erythema and scaling at the
Multiple forms of hemangioma (HA) have been reported, but of relevance here is UVL-induced HA. Chronic solar damage is a key cause of dermal HA in dogs with strong clinical association between sun exposure and tumor development on the skin of the ventrum. Sun-induced HA is more common than UVL-induced hemangiosarcoma (HSA) and may represent progression from vascular alteration to malignancy. In addition, UVL-induced HA can be distinguished from non–sun-induced HA by concurrent presence of actinic dermatitis; sun-induced HA commonly presents with multiple tumors.

Early lesions are punctate and appear as small, flat, purple discolorations. With time, lesions enlarge to well circumscribed, firm or fluctuant, red-to-purple plaques or nodules within the skin, varying in size from 0.5 to 4 cm (Figure 3). Larger lesions can ulcerate and bleed. As these tumors rarely metastasize, morbidity has been associated with excessive hemorrhage and secondary infection.

Hemangioma on the ventrum of a spayed American Staffordshire terrier (9 years of age).

Truncal solar dermatitis in the same patient as Figure 1. Note the accentuation of normal skin wrinkling (lichenification) with erythema and slight scaling in the axilla. Follicular ostia are prominent.

HA = hemangioma, HSA = hemangiosarcoma, SCC = squamous cell carcinoma, UVL = ultraviolet light
Hemangiosarcoma

UVL-induced HSA may represent malignant transformation within sun-induced HA or most often as progression from actinic keratoses (see below) and thus are most common on the ventral thorax and abdomen. As with HA, sun-induced HSAs are typically superficial in the dermis, often multiple in number. These tumors may be discrete or poorly circumscribed, dark red to purple, fluctuant, and often smaller than 2 cm in diameter (Figure 4). Prognosis is significantly better for sun-induced HSA than deeper and non–sun-induced cutaneous HSA, as the latter often can represent metastasis from distant sites of primary tumors.

Actinic keratosis

UVL can also cause direct damage to keratinocytes, producing mutations and resulting in expansion of mutated cell populations. The resultant actinic keratoses or sun-induced plaques that develop individually or in multiples are usually smaller than 1 cm in diameter. Early lesions resemble solar dermatitis, but the skin eventually becomes more palpably thickened and firm. Most lesions are crusted, and severe hyperkeratosis may resemble a cutaneous horn. In dogs, actinic plaques are most common on the glabrous and lightly pigmented skin of the axillae, flanks, ventral abdomen, and lateral areas of the extremities (Figure 5).

Squamous cell carcinoma

SCC is also noted to develop in areas of chronic inflammation, injury, and viral infection. Non–UVL-induced tumors can develop in different breeds and at different body locations than actinic disease. UVL-induced SCC rarely metastasizes. SCC is the second most common cutaneous malignancy in dogs. In humans, more than 80% of cutaneous SCCs may be associated with actinic keratosis.²

While non–UVL-induced SCCs often present as single tumors, actinic-induced SCC may present as multiple tumors and associated with other lesions of solar dermatitis. SCCs appear as proliferative and ulcerated plaques (Figure 6, page 24). Older lesions may become crateriform and easily traumatized, leading to persistent serum drainage and/or hemorrhage.
Closing thoughts

Distinguishing lesions of sun-induced dermatoses often requires biopsy and histopathologic tissue examination. The suspicion of sun-induced dermatitis is heightened by lesion appearance, lesion location, and worsening with increased exposure to intense sunlight.

Treatment of actinic dermatoses and UVL-induced tumors consists of removal of specific lesions, reduction of sun-exposure (including use of sunblock), antibiotics when indicated, and retinoid administration. Previous studies have documented the overexpression of COX-2 in actinic keratoses in humans and dogs. In a recent study, dogs treated with firocoxib (5 mg/kg q24h), a COX-2 inhibitor, demonstrated improvement clinically and histopathologically. In particular, radical surgical resection of SCC and HSA should be attempted. While the sun-induced forms of these tumors rarely metastasize, significant morbidity can result from chronic hemorrhage and secondary deep pyoderma, often leading to euthanasia. ■ cb

HSA = hemangiosarcoma, SCC = squamous cell carcinoma, UVL = ultraviolet light

See Aids & Resources, back page, for references & suggested reading.