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Alopecia in dogs

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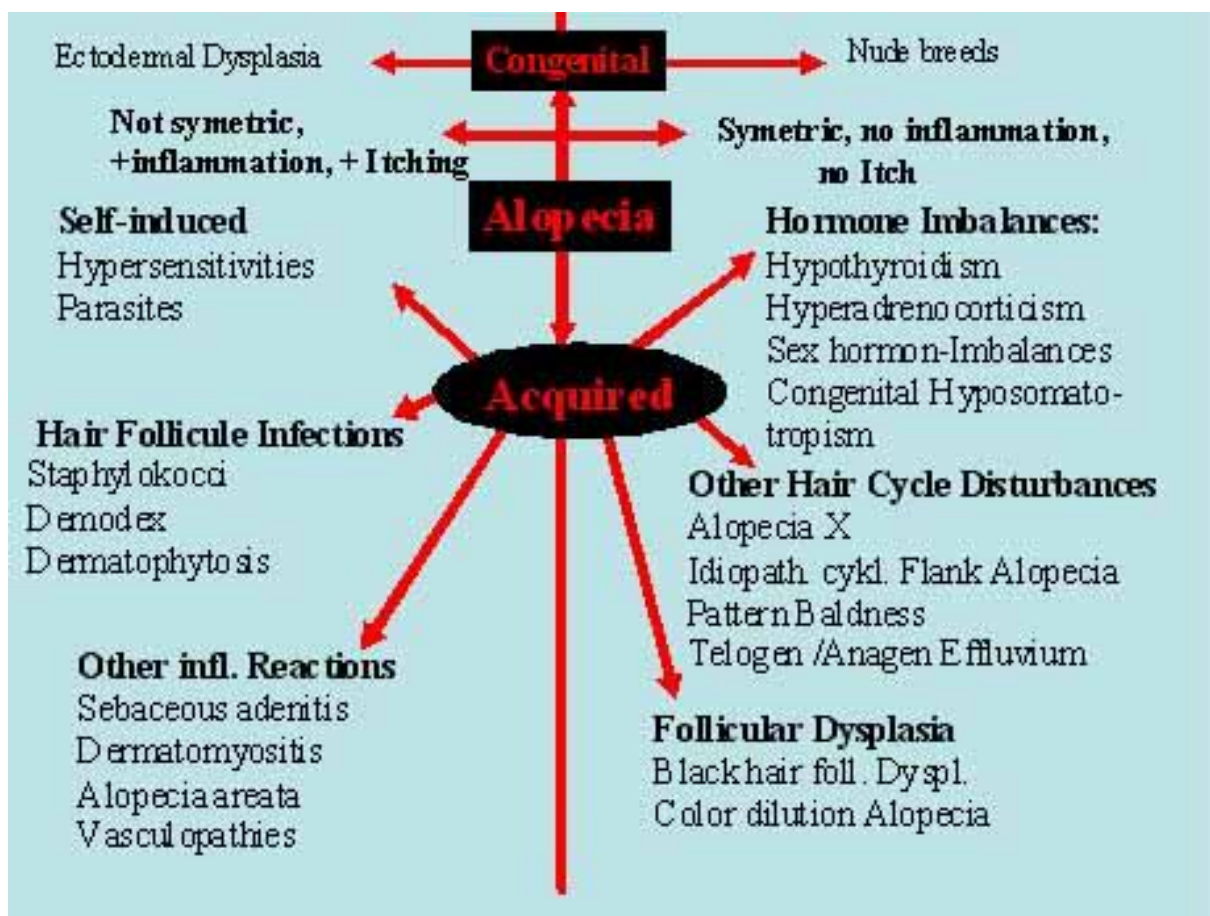
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CLINICAL APPROACH of CANINE ALOPECIA
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Alopecia is defined as the loss of hair from areas of the body in which a normal hair coat is expected. The first step of the work-up of such condition consists in assessing that hair loss is real and that the appearance of the dog is not associated with self-trauma (broken hair, excoriations). Microscopic evaluation of hair tips is sometimes necessary to confirm that tips of remaining hairs are intact (true hair loss) or, on the contrary, broken. Broken hairs suggest pruritus-associated condition such as hypersensitivity reactions or ectoparasites. These conditions are beyond the scope of this presentation.

When hair loss is assessed, one must look for signs of inflammation and determine whether the condition is symmetrical or not. Symmetrical alopecia are usually non-inflammatory, at least during the early stages. On the contrary, non-symmetrical alopecia are often associated with signs of inflammation such as erythema, crusts, erosions etc... Pruritus is also frequently present.



Differential diagnosis and work-up of non-symmetrical, inflammatory alopecia:

The most frequent causes of inflammatory alopecia are the folliculitis and, especially, staphylococci-, demodex- and dermatophyte-associated ones. These three conditions are often characterized by moth-eaten, patchy alopecia and pruritus may be present. Typical signs of inflammation such as papules, pustules or crusts are sometimes but not always observed. The work-up of such cases includes deep skin scrapings (for demodex), wood's lamp examination (for dermatophytes), microscopic examination of plugged hairs (demodex, dermatophytes), fungal cultures and cytological examination of direct smears (for bacteria).

Another not uncommon but often overlooked cause of patchy alopecia is sebaceous adenitis. This immune-mediated destruction of sebaceous glands is characterized by scales, hair loss, seborrhoea and, sometimes, pruritus. Microscopic examination of plugged hair may reveal follicular casts, which

are suggestive but not pathognomonic changes. In fact, follicular casts may be observed in other affections of the hair follicle such as demodicosis.

Akitas, poodles, Vizslas are predisposed for sebaceous adenitis but the condition can affect virtually all dogs^{1,2}. The definitive diagnosis is made by histological examination of affected skin samples and demonstration of lympho-histiocytic inflammation of the region of the isthmus and the subsequent destruction of the sebaceous glands.

If former causes of non-symmetrical, inflammatory alopecia have been ruled-out, histopathological examination of affected skin samples is mandatory to make the diagnosis of rarer conditions such as vaccine-induced alopecia, dermatomyositis, alopecia areata or vasculopathy-associated alopecia. Case history and/or clinical examination may however provide clues that could suggest the likely diagnosis. Dermatomyositis is, for example, a scarring alopecia that affects preferentially Collies and Shetland dogs. Some breeds, like Jack Russel Terriers, are predisposed for vasculopathy-associated alopecia etc....

Differential diagnosis and work-up of symmetrical, non-inflammatory alopecia:

Symmetrical alopecia are usually associated with disorders of hair-follicle cycling or follicular dysplasia. Hyperadrenocorticism and hypothyroidism are the most frequent of aberrant hair-follicle cycling in dogs. They are usually associated with numerous other dermatological and non-dermatological changes that make the diagnosis likely.

Hyperadrenocorticism often causes skin atrophy, calcinosis cutis and comedones. Secondary bacterial infections readily develop in Cushing dogs. These dogs usually present other clinical signs such as polyuro-polydypsia, muscle atrophy, liver hypertrophy, sexual cycle disturbances etc... Even if the suspicion is high, hormone tests are always required to confirm the diagnosis and choose the adequate treatment. The minimal work-up for a dog with suspicion of hyperadrenocorticism should include blood chemistry, complete blood count, urinalysis as well as low dose-dexamethasone test and ultrasound examination of the adrenals. Urine cortisol/creatinine ratio is helpful to rule out hyperadrenocorticism because its sensitivity is very high but cannot be used to confirm the diagnosis because of its low specificity. ACTH stimulation test is required to distinguish spontaneous hyperadrenocorticism and iatrogenic Cushing syndrome.

Hypothyroidism is a very frequently over-diagnosed condition. In fact, it is very difficult to distinguish true hypothyroidism and euthyroid-sick syndrome which results from numerous conditions (Hyperadrenocorticism, Infections, Cancers etc) and is associated with low serum value of thyroid hormones... Additionally numerous drugs such as steroids, sulpha drugs or anti-convulsivants also reduce basal T4 concentrations. Hypothyroidism is also associated with non-dermatological signs such as lethargy, reproductive problems, weight gain or neuropathies. Dermatological signs include alopecia, puppy-coat, recurrent pyodermas, seborrhoea.

Clinical signs of canine hypothyroidism		
Common	Uncommon	Rare
Dry, dull hair coat Hypotrichosis Seborrhoea Lack of hair regrowth post clipping Weight gain/obesity Lethargy/mental dullness	Alopecia Pyoderma Ceruminous otitis externa Facial myxedema (tragic look) Weakness Exercise intolerance Cold intolerance	Hypothermia Bradycardia Ocular disorders Reproductive disorders Facial nerve paralysis
Most useful test for the diagnosis of canine hypothyroidism		
TT4 (RIA)	Economical Relatively reliable in ruling out hypothyroidism	
FT4 (Equilibrium Dialysis)	Relatively expensive Very good diagnostic accuracy in most cases No interference with AT4A	
cTSH	Useful when combine with TT4 or FT4	
TSH stimulation test	Expensive but very useful with rhTSH	
ATgA	For screening breeding stocks	

Alopecia is rarely associated with sex hormones imbalances. However Sertoli-cell tumors or ovarian cysts are sometimes associated with symmetrical alopecia.

Numerous other conditions can affect the hair cycle and most of them are poorly understood.

Alopecia X affects primarily nordic breeds such as Pomernians, Chows-chows, Malamutes but also some other breeds like poodle³. Puppy-coat (loss of primary hair and retention of the secondary hair) is the more characteristic feature of this condition and may persist several months before the onset of alopecia. The cause of the condition is unclear even if changes in the adrenal metabolism/balance of sexual hormones are likely.

Seasonal flank alopecia is a striking condition characterized by flank hair loss that occurs mainly in autumn with hair regrown occurring in spring⁴. Lesions are characterized by very-well demarcated areas of alopecia and hyperpigmentation. Histopathologic changes are usually typical.

Telogen effluvium is characterized by hair loss that occurs several weeks to months after a stress factor (diseases, fever, hormonal change) has synchronized all or almost all hair follicle in the telogen phase. Anagen effluvium is the consequence of the damage that occurs on growing hair. It is also associated with stressful events or drug administration.

Post-clipping alopecia occurs most often in German shepherd dogs, Labradors and nordic breeds. In this syndrome, the hair coat does not completely regrow in the area that has been clipped⁵. Such condition may be associated with sub-clinical hormonal imbalances such as hypothyroidism, disturbance of the local circulation or the use of local anaesthetic drugs.

Pattern baldness affects predisposed breed such as Dachshund or Whippet and is characterized by miniaturization of hair follicles that occur in young dogs and affects specific areas such as the ventral thorax, the concave aspect of the pinnae or thighs. It is currently unknown if this condition should be regarded as an aberration of hair-follicle cycling, as a follicular dysplasia or a genetic abnormality. Follicular dysplasia is a vast group of genetic conditions that affects the shape of the hair follicle or hair shaft and results in hair growth disturbance and hair shaft abnormalities and fragility⁶. The most frequently encountered diseases of this group are associated with an aberration of melanin distribution within hair bulbs/shafts. Black hair follicular dysplasia and color-dilution alopecia belong to this group and are characterized by fragile, easily broken hair in areas covered by black hairs or dilute hairs respectively. The histological diagnosis of follicular dysplasia is usually easy.

CANINE FOLLICULAR DYSPLASIAS

Coat colour-linked



Colour dilution alopecia
Black hair follicular dysplasia
Follicular dysplasia of red and black
Doberman Pinscher

Non coat colour-linked



Follicular lipidosis in Rottweiler Portuguese water dog follicular dysplasia
Irish water spaniel follicular dysplasia

1. Mueller RS, Bettenay SV, Vogelnest LJ. Sebaceous adenitis in three German Shepherd Dogs. Aust Vet Pract. 2001;31:110+.
2. Reichler IM, Hauser B, Schiller I, et al. Sebaceous adenitis in the Akita: clinical observations, histopathology and heredity. Vet Dermatol. 2001;12:243-253.
3. Frank LA, Hnilica KA, Oliver JW. Adrenal steroid hormone concentrations in dogs with hair cycle arrest (Alopecia X) before and during treatment with melatonin and mitotane. Vet Dermatol. 2004;15:278-284.
4. Daminet S, Paradis M. Evaluation of thyroid function in dogs suffering from recurrent flank alopecia. Can Vet J. 2000;41:699-703.
5. Diaz SF, Torres SM, Dunstan RW, Lekcharoensuk C. An analysis of canine hair regrowth after clipping for a surgical procedure. Vet Dermatol. 2004;15:25-30.
6. von Bomhard W, Mauldin EA, Schmutz SM, Leeb T, Casal ML. Black hair follicular dysplasia in Large Munsterlander dogs: clinical, histological and ultrastructural features. Vet Dermatol. 2006;17:182-188.