Dermatologic problems in puppies

In small animal practice we face young dogs and cats of all breeds. Quite often even very young animals suffer from severe skin diseases. Because the animals are so young, the informations given by their history is limited. Often these diseases are zoonoses, but in those cases we normally get a hint from the history. Sometimes those diseases are congenital genetic defects, but in many cases “only” skin diseases are diagnosed, with a predisposition for young animals.

Congenital dermatoses are abnormalities of the skin that are present (at least to some degree) at birth. The etiology is not always known, but most of this group of diseases are due to genetic defects that arise spontaneously. Hereditary developmental defects are not present at birth but manifest later in life.

■ Canine Ichthyosis
Canine Ichthyosis is characterized by the accumulation of large scales all over the body surface including paws with footpads. This is caused by an excessive hyperkeratosis. The disease is present at birth and becomes progressively more severe. The footpads develop masses of hard keratin. Affected dogs become progressively alopecic and may become pruritic. The renewal time of the epidermal cells is extremely shortened. A autosomal recessive mode of inheritance is likely.

Most animals are euthanized, as the clinical management is very difficult and most owners are not able/willing to deal with the necessary intensity of topical treatment.

■ Hereditary Alopecia and Hypotrichosis
Alopecia is the absence of hair in sites where it normally should be, and hypotrichosis is less hair than normal. The classification of hereditary alopecias is controversial, but many different syndromes can be included. A hereditary defect and a desired congenital alopecic phenotype need to be separated, e.g. the Chinese Crested dog or the Mexican Hairless dog.

■ Cutaneous Asthenia
The Ehlers-Danlos-like syndrome is also called Dermatosporaxis or rubber puppy syndrome. It results from structural defects in collagen. The disease has been described in many dog breeds and also in cats. It is heritable and has been shown to be a dominant autosomal trait.
The Ehlers-Danlos-like syndromes have varying degrees of severity and may not be noticed for several months in mildly affected animals. The skin is hyperextensible and exhibits increasing laxity. Even more important, the skin is very fragile, and affected animals suffer from repeated lacerations and show extensive scarring. Different subtypes as described in human medicine are likely. The clinical diagnosis is confirmed by histology or by electron microscopy if necessary.

**Lymphedema**
This is a swelling of extremities due to the abnormal accumulation of interstitial tissue fluid. The primary lymphedema is due to developmental abnormalities. It is characterized by soft, non-painful edema of one or more extremities. Generally the disorder is recognized by the breeder between birth and 12 weeks of age.

**Pituitary Dwarfism**
Since canine pituitary dwarfism was first described in Germany in the early 1940s, it was reported not only in German shepherds, but in many breeds. The disease is transmitted as an autosomal recessive trait. The clinical signs are caused by deficiencies of growth hormone and sometimes other adenohypophyseal hormones. The dogs are dwarfs, the mentality is altered (fear, aggression), eruption of permanent teeth is delayed and the immune response is suppressed. The puppy coat is retained and the dogs become alopecic and hyperpigmented. Affected puppies are usually miniatures of their unaffected littermates.

**Black hair follicular dysplasia**
This is an abnormality seen in black and white, tri-coloured or brown/blue and white spotted dogs. Hair loss of the black areas starts soon after birth and progresses to baldness. This hair follicle dysplasia is similar to colour mutant alopecia, macromelanosomes can be found in trichogramm and by means of histology. Apart from intra- and perifollicular “pigment-clumping” there are morphologic anomalies of the hair follicles and growing hair shafts.

**Dermatomyositis**
Is a hereditary skin and muscle disease of young dogs. In Collies the syndrome is inherited as an autosomal dominant trait, which is also true for the Shetland Sheepdog most likely. Muscle involvement develops after cutaneous lesions in most puppies, and correlates to some extent with the severity of the dermatitis. Skin lesions usually develop between 7 weeks and 6 months of age. They may resolve spontaneously at maturity or progress. Initial symptoms are an erythema-
tous dermatitis with vesicle formation and hair loss, which develops on the bridge of the nose, around the mouth, on the ear tips, on the tail tip, and on trauma-prone parts of the extremities.

Scaling and crusting may ensue and scarring may be the outcome. Rarely, oral and footpad ulcers are seen. The severity of signs may wax and wane. The most common clinical sign of myositis is an asymptomatic atrophy, especially of the muscles of mastication and distal limbs. In severe cases a clinical management may be difficult to impossible. Due to difficulties in drinking and eating an aspiration pneumonia may develop. Furthermore the high dosages of glucocorticoids, which are necessary to control severe skin problems, may worsen the muscle problems.

- **Impetigo**

  Young puppies show very superficial yellow pustules (intrafollicular) on the ventral region of the abdomen and inguinal fold. Most cases are sufficiently treated with antibacterial shampoos but occasionally the disease evolves into bacterial folliculitis.

- **Juvenile Cellulitis**

  This is also known as puppy strangles or juvenile pyoderma. It is a common disease in puppies from 3 weeks to 12 months of age. As some breeds and families are predisposed, a hereditary influence is suspected. The mandibular lymphnode is enlarged and rapidly developing edema, papules, and pustules are seen at lips, eyelids and pinna. The lesions start to produce serous to purulent exudate. Also a purulent otitis externa may develop in a short time and occasionally a lymph node may rupture and discharge hemorrhagic to purulent exudate. Cultures stay negative and there is a dramatic improvement on glucocorticoids, which makes an immunologic dysfunction most likely. Genital and perianal skin and toes may be affected in some cases, and generalised lymphadenopathy or cellulitis of the limbs may develop. In one third of the cases, fever and anorexia accompanies the cellulitis.
The most common skin diseases of the puppy are:

- Demodicosis, especially the localised form in young dogs. Small round alopecic spots often lead to the wrong diagnosis of dermatophytosis. Nevertheless with deep skin scrapings, the demodex mites can be found. It is important to differentiate between localised and generalised form, because the latter does need a therapy, whereas the former does not. The generalized form may be difficult to control which leads to a bad prognosis in those cases. A T-cell mediated immunodeficiency is suspected, the animals have to be excluded from breeding.

- Dermatophytosis, a zoonoses, which means that we can assume by the history that other animals or human family members are affected. With this kind of "population"-problem it is necessary to search for asymptomatic carriers as the primary source of infection may not be symptomatic itself. As in demodicosis the infected animals can develop small, round, alopecic spots, but there may also be scales, crusts, follicular casts or milary dermatitis in cats. To diagnose dermatophytosis a fungal culture is needed, not only to proof the disease, but also to identify the species of the dermatophyte. Histology is helpful in cases with negative culture. On the one hand the direct proof of the organisms may be possible, on the other hand the lack of a perifollicular inflammation together with a negative culture can be considered as a fairly save exclusion. The histologic samples have to be taken from the edge of lesions as the dermatophytes need the anagen, growing hair, they are not found in completely alopecic areas.

- Allergy or hypersensitivity reactions, in the age range up to 6 months, especially food allergy or intolerance should be considered, which can affect even very young puppies. The main symptom is pruritus without typical distribution. In addition, some dogs show secondary pyoderma. Thus due to collarettes, small alopecic round spots can be seen, which makes it an important differential diagnosis to the two diseases mentioned above. Atopy is rare in very young dogs but should be a differential diagnosis in predisposed breeds after exclusion of all other options.