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1. Introduction

Shar-Peis account for one of the most interesting breeds. Partly for their history and origin in ancient China, but also for their characteristic morphology (the renowned ‘skin folds’/ wrinkles) which made it very popular worldwide, becoming nearly an icon. A third reason would be that they are a very useful model, as we will soon see, to study certain diseases and some biological processes.

If anyone asks a several veterinarians about Shar-Peis, they will all agree to confirm that is one of the most prone – if not the most prone – to skin diseases, and with the most delicate health. They are frequently visiting the veterinary surgeries. What is the reason behind this fact? There are two major factors, also interrelated:

a) Shar-Peis nearly became extinct during the Chinese revolution. There were only few specimens alive in the late sixties. The breed picked up thanks to a breeder from Hong Kong, from just a handful of dogs and started to export them to USA, where more breeding took place. From a genetic point of view, a phenomenon called ‘bottle neck’ developed. In other words, the loss of genetic diversity and an intense endogamy within the breed. It has been well documented that the loss of genetic diversity leads to the expression of lethal genes and a deterioration of the general health.

b) In the process of breed selection, in particular by american breeders, the wrinkles and skinfolds were accentuated from the existing ones in old Shar-Peis. In this way, what used to be purely ‘wrinkles’, became true cutaneous mucinosis. This condition, in severe cases, is to blame for a large part of Shar-Pei diseases: entropion, intertrigo, bacterial folliculitis,...

We will now review some of the most prevalent diseases within the breed of Shar-Peis and the conditions which are specific or nearly exclusive of this breed.

2. Common dermatological diseases

Shar-Peis are clearly predisposed to certain common conditions which also appear in other breeds. Amongst those we could high-light:

a. Intertrigo or skin fold pyoderma.
It will develop in the typical skin folds of the breed. It is more frequent in puppies and young dogs, which have more skin folds. The treatment is that of superficial pyodermas.

b. Demodicosis.
Is one of the most prone breeds(Scott et al, 2005). It tends to adopt a generalised juvenile form which starts with multifocal alopecia with erythema. The presence of comedones is also a characteristic sign of demodicosis in Shar-Peis. In some cases, due to the thickness of the dermis in Shar-Peis, it can prove difficult to isolate these mites, and sometimes we will have to perform several skin scrapes. According to certain authors, we might have to take skin biopsies to detect the parasites (Griffin & Rosenkrantz, 1992). In general, juvenile demodicosis in the Shar-Pei responds well to treatment (ivermectin, amitraz) and spontaneous cure has also been reported by breeders. Despite this, it should be treated...
according to the usual protocol.

c. Atopic dermatitis
It is probably the most common cutaneous disease of this breed. Although no reliable data are available about its incidence in this breed, the percentage of atopic Shar-Peis is very high and, according to some authors, it could be more than 50%. What is characteristic of this breed is that the signs of atopic dermatitis appear in puppyhood, sometimes even at the age 2 – 6 months. More than 37% of the cases will present in dogs of less than 6 years of age. The clinical signs are quite characteristic, with intense pruritus and erythema in the face, axillae, groin, skin folds and paws. Otitis externa is common. It is one of the breeds where liquenification happens quickly.

According to the textbook of Scott et al (2005), Shar-Peis are also predisposed to suffer hypothyroidism, mast cell tumours, histiocytomas, papillomata and viral pigmented plaques.

3. Immune-mediated neutrophilic vasculitis.
The condition of immune-mediated neutrophilic vasculitis belongs to a subgroup of non-septic vasculitis due, probably, to the accumulation of immune-complexes of small calibre within the blood vessels (venules, capillaries, arterioles). They have been described associated to infectious diseases (leishmaniosis) and to various adverse drug reactions, although most of them are idiopathic. The clinical signs consist of erythema, purpura, crater-like ulcerations and cutaneous necrosis, generally in extremities, tail, pinnae, lips or planum nasale. Some animals present also systemic signs: fever, asthenia or anorexia.

There is a specific form of idiopathic immune-mediated neutrophilic vasculitis described in Shar-Peis (Malik et al, 2002). It appears in young Shar-Peis, which develop erythma, haemorrhagic papules, oedema and necrotising ulcers, some of them crater-like, in the trunk, which can progress into large areas of cutaneous necrosis. The affected animals will be febrile. The condition is diagnosed by means of histopathology, where there is evidence of a severe neutrophilic vasculitis, not only in small blood vessels but in blood vessels of medium to large calibre. There is not much information about the therapeutics of this particular condition but it is likely that, being a neutrophilic dermatosis, cyclosporin A could be the most effective drug (5mg/kg/day). The cases described in the literature were treated with cyclophosphamide and corticosteroids, with fairly satisfactory results.

4. Mucinosis
It is without a doubt the most characteristic disease of Shar-Pei dogs. Although it is relatively common and can be serious, it was until recently fairly poorly understood. In the literature it is described as an abnormal accumulation of mucin in the dermis, which leads to the thickening of the skin and the formation of excessive skin folds and/or cutaneous mucinous vesicles. In the common Shar-Pei (Chinese) there is a reduced number of skin folds (head and trunk). The fact that there are now animals with excessive amount of skin folds (mucinosis) is probably due to breed selection.

Recent studies have proved that:
1. Mucinosis in the Shar-Pei (and the normal skin folds of the breed) are due to accumulation of hyaluronic acid (HA) in the dermis
2. Shar-Peis present also a high concentration of HA in serum (originating from the dermis)
3. Skin fibroblasts of the Shar-Pei, isolated and cultivated, produce more HA than fibroblasts isolated from the dermis of other non-affected dogs (control group). The basic defect is then an excessive production of HA.
4. Genetic and molecular studies have demonstrated that there is a genetic defect in the synthesis of HA in dogs with mucinosis. One of the enzymes producing HA (HAS) is over-expressed and produces an
abnormally high amount of HA.

There are various factors which influence the severity of mucinosis. The first and undoubtedly most important is genetic. There are probably different degrees in the molecular change responsible and hence the different clinical degrees. Secondly, the age. In american lines (western Shar-Peis), the skin folds are deeper in puppies and disappear as the animal grows. There is probably a regulatory system in the expression of the gene HAS which is related to age. In third place, there are circumstantial factors, such as stress or fever, which in general reduce mucinosis. Corticosteroids will markedly reduce mucinosis quickly, due to the fact that they repress the expression of the HAS, which is why they can, occasionally, be used as part of the therapy in severe cases. This condition can be adopted as an interesting and useful model to understand the biology of the dermal extracellular matrix.

References


Scott DW, Miller WH, Griffin CE. (2001). Muller & Kirk’s Small Animal Dermatology. W.B. Saunders, Philadelphia