5-year-old male miniature Schnauzer dog with acute onset of severe macular erythema and multiple tender violaceous plaques all over the body. Which of the following is the most likely diagnosis?

1. Canine eosinophilic dermatitis (Well’s syndrome)
2. Sterile pustular erythroderma of Miniature Schnauzers
3. Erythema multiforme
4. Canine sterile neutrophilic dermatosis (Sweet’s syndrome)

**Signalment and history:** A 5-year-old, male intact, Miniature Schnauzer was referred for acute onset of pyrexia, depression, anorexia and pruritic skin lesions. The dog has been vaccinated regularly and the last vaccination was 8 months prior to the onset of the skin lesions. No drugs have been administered recently. No topicals, such as spot on or shampoo, have been used recently. On general examination the dog was mildly pyretic (39.4 °C) and depressed. On dermatological exam erythematous plaques with edema were noted on inner aspects of both pinnae, flanks, axillae, abdomen and legs (Figures 1). In particular all four limbs were swollen and warm, but not painful. The owner noted the skin lesions two days before the visit and they were getting worse. Hematology, serum biochemistry and coagulation profile were unremarkable. The differential diagnoses were canine sterile neutrophilic dermatosis (Sweet’s syndrome), sterile pustular erythroderma of Miniature Schnauzers, canine eosinophilic dermatitis (Wells’ syndrome) and erythema multiforme. Three 8mm skin biopsy punches were taken from the erythematous plaques on the axilla, flank and abdomen.

**Histopathologic description:** All three skin punches are characterized by similar histopathological lesions. The superficial, mid and deep dermis was severely edematous and there was a moderate to severe interstitial infiltrate, composed of predominantly neutrophilic granulocytes in the entire dermis(Figure 2, 3). Occasional eosinophils and lymphocytes were present. The blood vessels in the superficial and middermis were congested (Figure 4, 5). The epidermis was mildly to moderately irregularly hyperplastic.

**Morphologic diagnosis:** moderate to severe, superficial to deep, neutrophilic, interstitial dermatitis

**Name the condition:** Canine sterile neutrophilic dermatosis (Sweet’s syndrome)

**Follow up:** While waiting for the results, the dog received prednisolone 1.5 mg/kg orally once a day and pentoxiphylline 20 mg/kg orally twice daily. After three days of administration the general condition and the skin lesions improved dramatically. At the recheck after 4 weeks of treatment with both drugs the erythema and the edema had resolved completely and only mild scaling remained (Figure 6, 7).

**Comment:** Canine sterile neutrophilic dermatosis is a rare disease, resembling acute febrile neutrophilic dermatosis (Sweet’s syndrome) in humans. The etiology and pathogenesis in both species remain to be determined definitely and may be multifactorial. As in the human counterpart, dogs can have extracutaneous clinical features, such as fever, leukocytosis and neutrophilia, immune-mediated arthritis, pneumonia and cardiac failure. Pyrexia is a typical abnormality, but not always present. As showed in this case, the skin lesions in the dog include erythematous macules, papules, and plaques. Edema can be present. Histologically, the superficial to deep dermis is infiltrated by moderate to severe amounts of neutrophils, the presence of eosinophils is variable. The infiltrate is perivascular to diffuse. Leukocytoclasia is uncommon, but dermal hemorrhage is possible. Interestingly the dog reported here is a Miniature Schnauzer, a breed in which sterile pustular erythroderma occurs. Sterile pustular erythroderma has been described as the main non-infectious differential diagnosis of Sweet’s syndrome. These two diseases share several clinical and
histopathologic similarities. Miniature Schnauzers affected from sterile pustular erythroderma present with generalized erythematous papules and macular erythema. Histologically, however, in our case the neutrophilic infiltration targeting follicles and forming dermal or follicular pustules, typical for sterile pustular erythroderma of Miniature Schnauzer, were absent. Moreover, severe epidermal pustulation and crusting, usually with eosinophils, were also absent. In addition, multiple cases of sterile pustular erythroderma of Miniature Schnauzers have a history of shampooing in the 48 hours prior to the onset of the lesions.

The absence of shampooing in the anamnesis and the reported differences in the histological features gave a final diagnosis of Sweet’s syndrome, but interestingly a correlation between these two diseases has been hypothesized.

References:

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Figure 1.
Figure 2.

Figure 3.
Figure 4.

Figure 5.
Figure 6.

Figure 7.