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An experimental model of canine DNCB-induced allergic contact dermatitis: clinical and hematological features

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Abstract

Allergic contact dermatitis is an inflammatory skin reaction caused by direct contact with an offending substance. The aim of this study was to establish a suitable method for induction of allergic contact dermatitis in dogs for future studies. For this purpose, 1% and 2% dinitrochlorobenzene (DNCB) were injected with and without ethanol and olive oil or acetone and olive oil subcutaneously in the back of 8 BALB/c mice (4 equal groups). Then, based on the types and severity of the symptoms, it was decided to sensitize the dogs with only 2% DNCB. Finally, in two stages, 2% DNCB with or without dimethyl sulfoxide (DMSO) was injected with ethanol or acetone and olive oil subcutaneously in thoracic and scapular regions of five dogs. Two percent DNCB challenge caused clinical findings including erythema, edema and skin scaling, as well as pruritus and scratching behavior in the mice. Clinical findings in dogs developed in mild severity including redness and swelling within a few days. There was a significant increase in total blood leukocytes, neutrophils, lymphocytes, eosinophils and monocytes counts at seven days in dogs. Also statistical analysis showed that one week after DNCB injection, IgE expression increased significantly and this increase continued until day twenty-one. Based on the result of this study, intradermal injection of 100 µL of 2% DNCB mixture with DMSO (dissolved in a 4:1 mixture of ethanol and olive oil) was a suitable method for induction of allergic contact dermatitis in dogs. Furthermore, the scapular region was also a convenient location to prevent self-induced lesions.

Key words: Allergic contact dermatitis, Atopic dermatitis-like, Dinitrochlorobenzene, Dimethyl sulfoxide, Dog

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