

Motivated Aggression In Golden Retrievers : No Correlation With Inbreeding

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At the Utrecht University Companion Animal Clinic, 26% of all aggression diagnoses concern fear-motivated aggression. This type of aggression is found to be most frequent in Golden Retrievers, Rottweilers and Bernese Mountain dogs. The behavioural phenotype is the result of interaction between genetic and environmental factors. The treatment of behavioural problems in dogs is focused on changing these environmental factors, mainly by influencing the learning processes in the dog. The genetic basis of behaviour, however, is hardly given any attention. The goal of this study was to determine the effect of inbreeding on the occurrence of fear-motivated aggression in the Golden Retriever.

A case control study was conducted comprising Golden Retriever patients (n=30) and randomly chosen controls of the same breed (n=66). The animals of both groups were born between January 1, 1981 and December 31, 1991. Each animal in each group had pedigree data available over seven generations. An animal was included in the study only if a complete set of pedigree and/or behavioural data of the animal was available. The control dogs were randomly chosen from the Golden Retriever stud book. The patients were referred to the Utrecht Clinic because of their aggressive behaviour. Of these patients behavioural data were collected according to a standard protocol. In each of the patients the diagnosis of fear-motivated aggression was made. The criteria for this diagnosis are described elsewhere. For both groups the individual coefficient of inbreeding was calculated by computer. Cluster analysis was used to assign related subgroups.

There was no significant difference in the level of inbreeding between the patient group and the control group. The examined Golden Retriever population appeared to consist of two familial subgroups (A and B). Fear-motivated aggression occurred throughout the population, but subgroup B comprised significantly more ($P=0.035$) fear-motivated aggressive dogs than did subgroup A.

The finding that family group B contains more aggressive dogs than group A strongly suggests that genetic factors are important for the expression of fear-motivated aggression. No relationship was found between the level of inbreeding and the occurrence of fear-motivated aggression. Therefore, fear-motivated aggression is not likely to have a recessive mode of inheritance. Hence, a dominant mode of inheritance with variable expression must be considered. This seems to be confirmed by fear-motivated aggression being a breed problem. The latter is also reflected by the finding that the aggression occurs in the entire population. The finding that group B contains more aggressive dogs than group A suggests that some lines in the population produce more aggressive dogs than do other lines. It is concluded that: 1) Genetic factors must be taken into account in the treatment of fear-motivated aggression. 2) Parents should be carefully selected from lines in which the frequency of fear-motivated aggression is relatively low. 3) Reducing the level of inbreeding is not likely to reduce the frequency of fear-motivated aggression in the Golden Retriever population similarly.