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Case Report

The First Confirmed Case of Dental-Skeletal-Retinal-Anomaly (DSRA) in the Cane Corso Italiano Dog Breed in the Czech Republic

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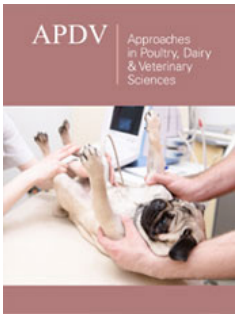

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Abstract

For the first time we detected the occurrence of Dental-Skeletal-Retinal-Anomaly (DSRA) in the Cane Corso Italiano dogs in the Czech Republic. Blood samples or buccal swabs were tested in the Laboklin laboratory. Confirmation of the presence of DSRA is important and alarming for all Cane Corso Italiano dog breeders. Responsible breeders should test each dog intended for breeding and eliminate all carriers from the breeding.

Keywords: Cane Corso Italiano dog, DSRA, Dental-Skeletal-Retinal Anomaly, Genetic diseases

Abbreviations: AKC: American Kennel Club; DSRA: Dental-Skeletal-Retinal-Anomaly; FCI: Federation Cynologique Internationale; ENCI: Ente Nazionale Cinofilia Italiana

Introduction

Cane Corso Italiano belongs to the subcategory of molossoid breeds. This breed inherited its name from the Molossians, an ancient Greek tribe known for breeding large dogs as their guardians. The first extant remark of Cane Corso Italiano dogs is a terracotta dog from about 2000 years B.C. In times of Roman Empire, molossoid dogs played an essential role. They were used in the battle campaigns of the Roman legions. Right during this time, the name Canis pugnax first appeared [1].

At the beginning of the 20th century the Cane Corso Italiano breed gradually disappeared. A small population has been preserved only in the southern Italian regions. The efforts to rescue the breed began in 1973 in Italy which proved to be successful. In 1994 the presidency of ENCI, Italian dog breeders´ organization, officially recognized the Cane Corso Italiano as a national breed. In 2007 the Cane Corso Italiano was recognized by the FCI (Federation Cynologique Internationale). The breed was also recognized by the AKC (American Kennel Club) in 2010 [1].

Our research group at the ZOO Tábor is interested in the research of the Cane Corso Italiano dog breed. We were the first to determine the median lifespan in Cane Corso Italiano dogs and for the first time in a mammal, we described the relationship between median lifespan and coat colour [2]. Moreover, we described the inheritance of coat colour in the Cane Corso Italiano dog [3] and inheritance of canine hip dysplasia in Cane Corso Italiano dogs [4].

Dental-Skeletal-Retinal Anomaly (DSRA) is a hereditary syndrome in the Cane Corso Italiano dogs which was described in 2021 by Christen et al. [5]. DSRA is clinically characterized by brittle, discoloured, translucent teeth, disproportionate growth and progressive retinal degeneration resulting in vision loss. DSRA is an autosomal recessively inherited disease. The molecular genetic cause is a mutation in the MIA3 gene which causes erroneous splicing of RNA encoded by this gene [5].

Case presentation

In the autumn of 2021 Martin Kudela, the owner of a Cane Corso Italiano dog, asked us for help concerning a diagnosis of his bitch Beverly z Koláčkova ranče. The bitch was 2,5 years old, and she suffered from the absence of tooth enamel. The teeth were brownish, translucent and brittle. From the age of 1 year the bitch sat atypically with her front limbs broadly outstretched. The dog has not been able to see at night since she was 1,5 years old, and an ophthalmological examination detected a significant reduction in her vision. Biochemical and haematological examinations did not show any pathological deviations from the reference limits. Symptoms of the disease began to appear from the age of seven months. The dog was examined by several veterinarians but none of them were able to make a diagnosis.

The blood of this bitch was genetically tested for the DSRA mutation in the Laboklin laboratory. Examination showed that the bitch is homozygous for the mutation causing DSRA. We also performed tests of buccal smears for DSRA in the Laboklin laboratory in 3 other dogs from the same litter. Bondie z Koláčkova ranče is homozygous for the wild type allele. This bitch is healthy. Bax z Koláčkova ranče is homozygous for the DSRA mutation. Bax suffers from similar symptoms as Beverly (Figures 1 & 2). Boy z Koláčkova ranče is heterozygous for the DSRA mutation and he is clinically completely healthy. The parents Rothorm JY dream all over the world and Amanda z Koláčkova ranče are clinically healthy. Both parents are heterozygotes, therefore they are carriers for the DSRA. Based on the above results of the examinations, we compiled a genetic scheme of the disease transmission (Figure 3).

Figure 1: Bax z Koláčkova ranče - the teeth have no enamel and are translucent, oligodontia is evident.

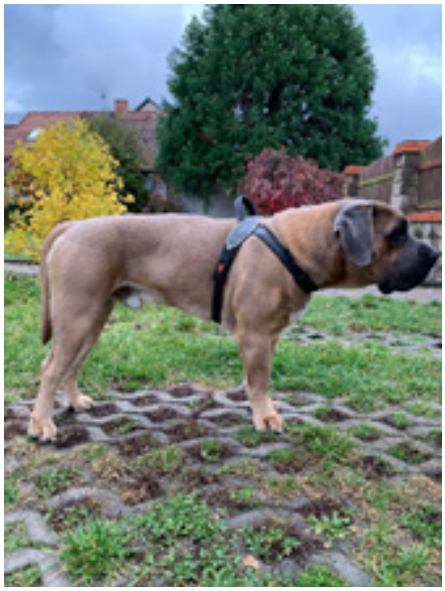

Figure 2: Bax z Koláčkova ranče - significantly shorter forelegs.

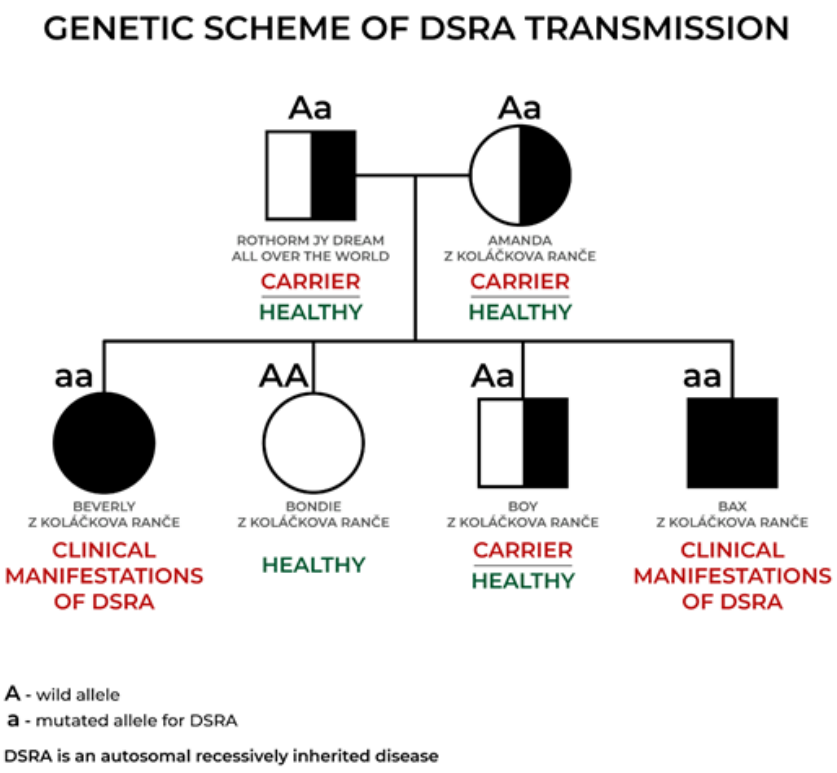

Figure 3: Genetic scheme of the DSRA transmission.

Discussion

Cane Corso Italiano is a healthy breed with a minimum of genetically transmitted diseases. The discovery of DSRA represents a significant milestone for all responsible Cane Corso Italiano breeders. Due to the fact that DSRA is an autosomal recessively inherited disease, affected dogs do not appear until the two heterozygotes, i.e. the carriers, are crossed. The heterozygotes may cross with dominant homozygotes for a long time and the number of heterozygotes (carriers) may gradually increase without any clinical manifestation of the disease in the offspring.

The only possible way to maintain a healthy Cane Corso Italiano population is to test all dogs and bitches before the considered crossing and to eliminate the heterozygotes, i.e. the carriers, from breeding. Some breeders cross dogs with dogs from other countries without performing any genetic testing. These matings contribute to the spread of DSRA. Specifically, in our study, the carrier was a dog Rothorm JY Dream All Over The World imported from Spain, which also mated with a large number of bitches. Half of all the puppies conceived by these matings are carriers without any symptoms of the disease which can only be detected by a genetic test for DSRA.

Acknowledgement

We would like to thank Mr. Martin Kudela, owner of the bitch Beverly z Koláčkova ranče, for providing clinical reports and initiating this study. We also thank the dog owners Mr. Jiří Petlach (Boy z Koláčkova ranče), Mrs. Pavlína Škvorová (Bax z Koláčkova ranče), Mrs. Andrea Zelnická (Bondie z Koláčkova ranče) for providing buccal swabs from their dogs.

Conflict of Interest

No financial interest and no conflict of interest exist.

References

1. Korec E, Ungrová L, Jantač P, Suchanová G, Veselková L, et al. (2021) Dog breeding. A Handbook for a responsible breeder. Europe Books, London, UK.
2. Korec E, Chalupa O, Hančl M, Korcová J, Bydžovská M (2017) Longevity of CANE Corso Italiano dog breed and its relationship with hair colour. Open Veterinary Journal 7(2): 170-173.
3. Korec E, Hančl M, Bydžovská M, Chalupa O, Korcová J (2019) Inheritance of coat colour in the CANE Corso Italiano dog. BMC Genetics 20(1): 24.
4. Korec E, Hančl M, Bydžovská M, Chalupa O, Korcová J (2018) Segregation analysis of canine hip dysplasia in CANE Corso Italiano dogs. Appro Poult Dairy & Vet Sci 2(3): 539.
5. Christen M, Vrieling HB, Minalto JO, Vries C, Kehl A, et al. (2021) MIA3 splice defect in CANE corso dogs with Dental-Skeletal-Retinal Anomaly (DSRA). Genes 12(10): 1497.