

Exophthalmos With Strabismus In Rams In Zaria - Nigeria.

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Target Audience: Animal breeders

Abstract

Exophthalmos with strabismus in eight rams in a research institute (National Institute of Agricultural Research, Zaria) is reported. The condition was sex-linked with the breeding coefficient of 9.38% in the population. This means that about (90% of the genes in the population of rams for strabismus were the same origin. This sex - linked gene was mainly transmitted through two pathways: a common grand dam for some rams and a common grand sire to some of the sires whose offspring's had strabismus. There was limited information on the pedigree because the foundation stock was purchased from a local market.

Keywords: Exophthalmos, Strabismus, Pedigree, Inbreeding Coefficient, Ram.

Description of the Problem

Exophthalmos with strabismus have been reported in certain breeds of cattle namely the Shorthorn and the Jersey breeds (1). It is reported that the condition in these breeds does not appear until the animal is 6 months old (2).

The cause of the bilateral protrusion of the eyeballs and anterior-medial rotation of the eye is not known. It is suggested to be due to a recessive gene since defects occurred following inbreeding (2) and relative absence of neurons in the abducens nerve (3). There is no known report of this condition documented in Nigeria, and else where in sheep. The report of this condition document the cases of exophthalmos with anterior-medial deviation of the eyeballs (Strabismus) in rams.

Case Report and Discussion

A total of eight Yankassa rams were noticed at weaning age (4 months) with a mild bilateral antero-medial deviation of the eyeballs. By the time

rams were 6 months of age the eyeballs had shown clearly the picture of exophthalmos with strabismus (Plate 1). All rams were from the same crop of lambing. Dams to those rams were progeny of a particular ram. There was partial and bilateral blindness. The rams appeared clinically healthy and were in good condition, alert and with high libido. This condition was sex-linked because only the F2 (rams) progeny from a particular ram had the condition. A collateral relationship was used in calculating the inbreeding relationship because there was no direct in breeding through mating plan. The following formula (4) was used to calculate the inbreeding coefficient;

$$F_x = \sum \left[\left(\frac{1}{2} \right)^{n_1+n_2+1} (1 + F_A) \right]$$

Where:

- F_x = Inbreeding coefficient of common parents
 n = Number of individuals in any path of relationship counting the parents X

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- Common ancestor whose inbreeding coefficient is FA (in this report FA is zero) and
 - All individuals in the path connecting parents to common ancestor.
- Σ = Summation of overall paths of relationships.
- X = is the individual whose inbreeding coefficient was calculated.

The inbreeding coefficient in the population was 9.38. This means that about 9% of the genes in population of the rams for exophthalmos with strabismus were the same gene from the same origin. This sex-linked gene was transmitted through two pathways namely: a common grand sire to some of the sires whose offspring's had exophthalmos with strabismus. The foundation stock was brought from local market around Zaria, thus the only information available about the pedigree. It was observed (2) that defective vision was the first sign followed by severe protrusion and anterior-medial deviation of both eyeballs in inbreeding programme of shorthorn cattle.

The rams were depopulated through slaughter with the aim of eliminating the recessive gene for exophthalmos with strabismus from the population.

Conclusion and Application

Researchers are advised to always purchase their foundational stock from well established farms with complete information on the animals rather than from local markets with little or no information on the livestock being purchased for

research purpose.

This report shows that exophthalmos with strabismus is not restricted to cattle alone but also other livestock as is reported here in rams. Researchers and veterinarians are advised to carry out through physical examinations of rams met for reproduction in order to eliminate the recessive genes for exophthalmos with strabismus from such population.

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