

Spontaneous Cleft Palate in a Family of Siamese Cats

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Genetic studies on spontaneous cleft palate with or without harelip have been reported in dogs (1, 2, 10, 11, 12, 21) and mice (16, 20). Occasional cases of cleft palate also have been reported in dogs (4, 9, 18, 19), a horse (13), cattle (14, 15), pigs (7), lions (8), jaguars (3), and a tiger (18). Veau and Le Hyaric (22) found a newborn cat with unilateral harelip and Rose (17) a kitten with cleft alveolus. Another kitten with multiple anomalies has been described by Voute *et al.* (23). However, little information is available on the heredity of cleft palate in cats, either with or without harelip. Thus, when we found a breeding stock of Siamese cats with repeated occurrence of spontaneous cleft palate we considered it important to investigate the familial relationship among these animals and to try to determine whether a genetic basis for the anomalies could be established.

Observations

The occurrence of cleft palate not associated with harelip (Figure 1) was first noticed in a newborn female Siamese kitten in a litter of seven otherwise normal animals. Soon afterwards a male kitten was born with the identical malformation but having different parents. In both cases the parents and litter mates were normal. Both cats were seen alive but were unable to nurse and died soon afterwards. Attempts to keep the male kitten alive with artificial feeding were not successful. No other anomalies were found by postmortem dissection or by radiography. To evaluate whether genetic factors might be responsible for the occurrence of those anomalies, the two pedigrees were traced (Figure 2). Only those cases for which a reliable diagnosis of cleft palate existed were reported as such in charting the pedigree.

Discussion

The possibility that cleft palate in mice with or without harelip may be dependent on several genetic factors has been discussed by Reed

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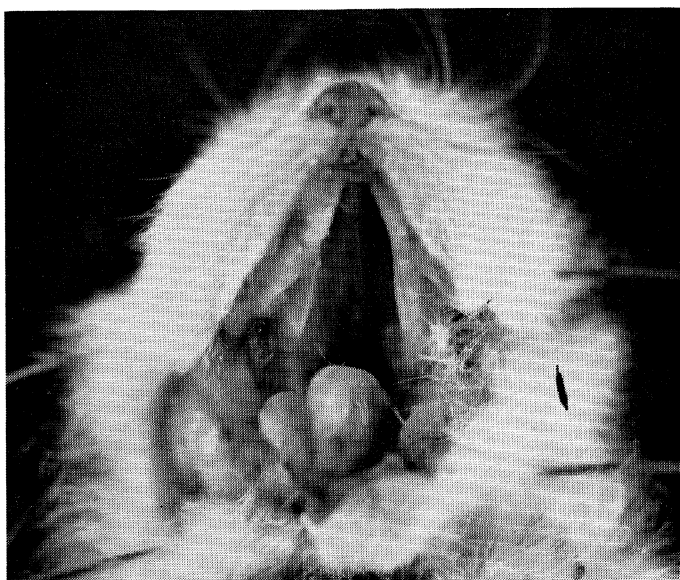


FIGURE 1. Cleft palate in newborn kitten.

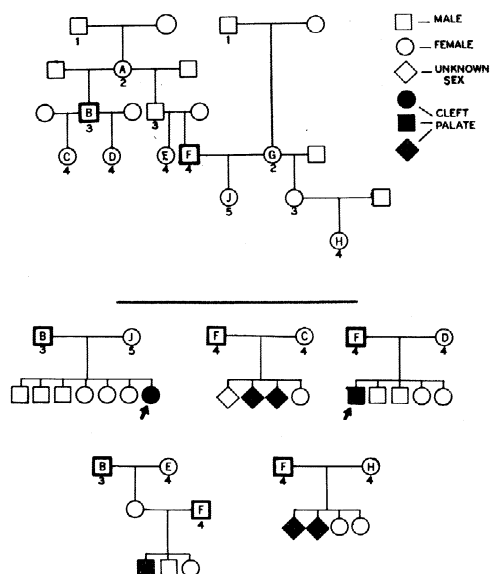


FIGURE 2. Lineage of the Siamese cats studied. Numbers indicate the generations. The letters are used for those individual cats producing cleft palate offspring shown in separate graphs underneath main lineage. Arrows indicate probands.

(16). Jurkiewicz crossed cleft palate dogs with each other and with normal dogs and concluded that there was a genetic influence present but with incomplete penetrance (10). Fogh-Andersen (5) demonstrated that, in man, cleft lip with or without cleft palate and cleft palate alone are inherited as separate entities.

It seems noteworthy that all the cats with cleft palate resembled the cases of the lion reported by Gabka (6) and the tiger described by Scott and Prophet (18). No other gross abnormalities were found in our cats, in contrast to the generally malformed cat of Voute *et al.* (23).

To date, we have not been able to raise a cleft palate kitten in order to investigate in a more direct way the genetic pattern involved. However, the close familial relationship of the abnormal kittens we have observed suggests that there was a genetic basis for cleft palate most likely dependent on more than one factor.

As can be seen in Figure 2, both males (B and F) which had offspring with cleft palate were descendants of the same female (A). The father (designated as 1) of this female had also produced another line of cats (see right side of chart). When these two lines were interbred several offspring with cleft palate resulted. The possibility that these males sired normal litters with other females cannot be ruled out, however.

Since this abnormality probably has a genetic basis in other mammals, it is likely that this is also true in cats. From the limited data available it is not possible to determine with certainty the mode of inheritance of this malformation. It is likely that several factors are involved and further studies are now in progress.

Summary

A breeding stock of Siamese cats with high incidence of spontaneous cleft palate without harelip was investigated. The pedigree of these abnormal kittens was traced and a close familial relationship was demonstrated. Though the condition seems to depend on genetic factors, the limited data available do not permit definite conclusions on the mode of inheritance.

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