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Peromelia and Cyclopia in a Simmental Calf

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Abstract: The absence of distal extremities is defined as peromelia, while the presence of a single eyeball in a single orbit on the median line or the presence of two incompletely fused eyeballs is defined as cyclopia. While cyclopia is common in calves, peromelia is rare. In the present report, it was determined that a male Simmental calf born with a case of dystocia had a typical case of cyclopia. However, the abnormalities were not limited to the eyeball arhinia, hypoplastic maxillary bone, upward curved jaw and peromelia were also observed. In the literature review, no case report was found in which cyclopia and peromelia were observed together, making this case distinct from others. Congenital anomalies are caused by a combination of genetic and environmental factors. The main cause of cyclopia in sheep is reported to be the Verratum plant. It is unlikely that this plant was responsible for the calf anomaly in the presented case. It is thought that the emergence of this situation is related to the formation of pregnancy as a result of the use of the bull in the farm for a long time in mating and related inbreeding.

Keywords: Anomaly, calf, cyclopia, peromelia.

Simmental Bir Buzağıda Cyclopia ve Promelia Olgusu

Özet: Distal ekstremitelerin yokluğu peromeli, tek göz küresinin median çizgi üzerinde tek yörüngede bulunması veya iki göz küresinin tam olarak kaynaşmamış olması siklopi olarak tanımlanır. Buzağılarda siklopi sık görülürken, peromelia nadirdir. Sunulan raporda distosi olgusu ile dünyaya gelen erkek bir Simental buzağının tipik bir siklopi olgusuna sahip olduğu belirlendi. Ancak değişiklikler göz küresi ile sınırlı kalmayıp arhinia, hipoplastik maksiller kemik, yukarı doğru kıvrık çene ve peromeli gözlendi Literatür taramasında siklopi ve peromelinin birlikte görüldüğü bir olgu sunumuna rastlanılmaması bu olguyu diğerlerinden farklı kılmaktadır. Doğuştan anomaliler, genetik ve çevresel faktörlerin birleşiminden kaynaklanır. Koyunlarda siklopinin başlıca nedeninin Verratum bitkisi olduğu bildirilmektedir. Sunulan vakadaki baldır anomalisinden bu bitkinin sorumlu olması olası değildir. Bu durumun ortaya çıkmasında işletmedeki boğanın uzun süre çiftleştirmede kullanımı sonucu gebelik oluşumu ve buna bağlı akrabalı yetiştirme ile ilgili olduğu düşünülmektedir.

Anahtar Kelimeler: Anomali, buzağı, cyclopia, peromelia.

1.Introduction

When the previously published case reports on congenital anomalies in calves are examined, it is becomes evident that the probability of anomalies is quite high. Since the development of tissues and organs is interconnected, it is possible to observed more than one anomaly in an animal (1). It has been reported that most of the anomalies observed in cattle breeding may be caused by genetic factors, environmental factors such as infection, toxins and drugs, or a combination of these factors (1, 2). Congenital anomalies in one or more systems are characterized by structural and functional anomalies of these systems (2).

The anomaly called cyclopia, synophthalmia or cebocephalus is the presence of a single eyeball in the median line, or the presence of two incompletely fused eyeballs within a single orbit (3, 4). It is characterized by the absence of a nose and a maxillary defect (3). Cyclopia has been observed in animals such as cows, buffaloes, sheep, goats, and mares (4, 5). It is known that grazing of sheep in places where there are veratrum plants increases their susceptibility to cyclopia (4, 6). Cyclopia in calves has been observed in many cow breeds such as Holstein (7), Swiss brown (8), and Friesian (9).

Peromelia is defined as the absence of the distal parts of the limb (10). There is very limited information in the literature about peromelia in calves (11, 12). The purpose of this case report was to emphasize that peromelia can occur together with cyclopy.

2. Case History

The presented case was encountered in the calf of a Simmental breed heifer raised in the family farm business in Yozgat. It should be added that it was learned from the anamnesis, It was recorded that the heifer became pregnant through natural mating with the bull raised in the same farm. The information was received from the breeder that there were no clinical problem during the pregnancy, the heifer did

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not get sick and no antibiotic, vaccine or treatments were administered. The heifer was examined due to a as a result of the complaint that the birth symptoms started but the delivery had not occurred. It was determined that birth canal was open, entered the canal in the longitudinal anterior position, but the calf's head was bent downwards. It was understood that the baby who was pushed backwards did not have legs and had anomalies. After applying the lubricant and correcting the position, the calf was removed from the uterus and vagina by applying extraction force.

It was determined that the dead calf was a male and weighed approximately 15-20 kg. The calf died while still alive in the womb at the time of birth. The sign of malformation in the calf was the presence of incompletely fused exophthalmic pupils in a single mid-orbital orbit. External ears appeared normal. In the upper part of the orbit was a skin-covered appendage. The maxilla was hypoplastic, the chin was curved upward, and arhinia (absence of the nose) was observed. Cleft lip and cleft palate were not observed. In addition, humerus was found to be present in the anterior extremities and femur in the posterior extremities, while radius, ulna, metacarpus and phalanx bones were absent in the anterior extremities and tibia, fibula, metatarsus and flank bones were absent in the posterior extremities. The lower parts of the legs were in contact with the ground were covered with skin. A diagnosis of peromelia was made (Fig 1).

A)

B)

Figure 1. A case of peromelia (A) and cyclopia (B) in a Simmental calf.A case of cyclopia and peromelia in a Simmental calf

3. Discussion

Cyclopia is characterized by the lack of separation between the right and left hemispheres of the brain and the inability to properly divide the eye orbits into two cavities (13). It is generally found in the form of two incompletely fused pupils in an orbit in the center (7, 14). In some cases of cyclopia, there may be no eyeball present in the median orbit (8). In many cyclopia cases, there is a proboscis-shaped piece of skin in the dorsal aspect of the orbit (15). In the presented case, it was observed that there was a skin opening in the center of the head and the two eyeballs were located close to each other. Arhinia and peromelia were formed. It is known that it is open to speculation as the factors that cause the emergence of multiple anomalies in calves are quite high (1). Peromelia in calves has been reported to be extremely rare (2). In the occurrence of congenital anomalies; in female and insemination genetic defects due to close inbreeding between the male animal used has been reported to be an important cause (16). The spesific cause of more than one developmental anomalies in this calf could not be determined. It is unlikely that teratogenic plant alkaloids are responsible for this calf's disfigurement. However, it is thought that the formation of pregnancies with the bull, which has been in the farm for a long time, and the consequent inbreeding caused this.

In conclusion, in the case presented, a newborn calf with cyclopia a case of peromelia was described. This case is thought to occur due to inbreeding.

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