

Cyclopia in goat (*Capra Aegagrus Hircus*): case report

Ciclopia em cabra (*Capra Aegagrus Hircus*): relato de caso

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RESUMO

A ciclopia é uma patologia que tem suas principais características baseadas na deformidade facial, tendo a presença de apenas um olho e uma pequena probóscide formando seu aparelho nasal. Essa anomalia pode ocorrer em diversos animais, sendo eles: bovinos, cachorros, ovinos, suínos, caprinos, entre outros. Esse trabalho cita um relato de ciclopia que ocorreu em um caprino, neonato, macho, que nasceu com apenas um olho e logo após ao seu nascimento veio a óbito. Portanto, conclui-se que a ciclopia é defeito de malformação congênita, que por ter a ocorrência da junção das duas órbitas em uma única, tornando-se uma doença de fácil identificação, mas na maioria das vezes é incompatível com a vida.

Palavras-chave: Ciclopia, Anomalia, Cabra.

ABSTRACT

Cyclopia is a pathology that has its main characteristics based on facial deformity, having the presence of only one eye and a small proboscis forming its nasal apparatus. This anomaly can occur in several animals, including cattle, dogs, sheep, pigs, goats, among others. This work aims to report a case of cyclopia that occurred in a goat, neonate, male, who was born with only one eye and soon after his birth died. Therefore, it is concluded that cyclopia is a defect of congenital malformation, which by having the occurrence of the junction of the two orbits in a single, becoming a disease of easy identification, but most often is incompatible with life.

Keywords: Cyclopia, Anomaly, Goat.

1 INTRODUCTION

The high frequency of the occurrence of prenatal malformations is surprising, and its huge variety is almost unbelievable. Several researchers reveal that the various types of malformations depend on some of the possible errors in the evolutionary mechanism that can cause morphological changes. These occur due to the influence of several factors of the environment, which may interfere in the control of cellular processes and influence the appearance of these anomalies. These disorders are called congenital malformations, as they arise during the formation of the conceptus (CRISTO *et al.*, 2012).

Congenital defects occur due to morphological and functional deformities of tissues, organs and systems that compromise the embryonic or fetal development of the animal. This can occur due to hereditary or environmental factors, such as: pathogen, toxic plant poisoning, erroneous drugs, beatings or food shortages. Moreover, several anomalies happen at random, without at least having a concrete cause (SCHILD, 2006; RADOSTITS *et al.*, 2007).

In the course of pregnancy, especially in the process of organ formation, numerous reasons are capable of being correlated with deficiency, such as structural changes, drugs, infectious agents and/or radiation (WAMMES *et al.*, 2012).

In cyclopia there is the absence of globular tissue or its presence in a rudimentary manner, which vary between one or two complete adjacent eyeballs. Although there are many reports of cyclopia in humans, which are studied and analyzed in detail (ORIOLI *et al.*, 2011; MAHABADY; BARATI, 2012), there are also reports in several fetuses and organisms of domestic animals, such as: sheep (BINNS *et al.*, 1962), pigs (EVANS, 1987), dogs (NJOKU *et al.*, 1978), buffaloes (THIPPESWAMY *et al.*, 1996), cows (OZCAN *et al.*, 2006) and goats (RASHED *et al.*, 2014).

Cyclopia, being a definitely uncommon disease, is related to the transformation of the nostril into a tubular nasal apparatus named proboscis and the junction of its orbits into a single, located in the medial line of the face. This deformity usually accompanies another pathology, making the animal with cyclopia unable to live (PACHECO *et al.*, 2011).

From the moment the junction of the median nasal eminences occurs, there is the formation of the proboscis, which is also considered as the tubular nose, or even as thrunk. With this, the eyes are in the midline of the face, fixing a single median eye and characterizing cyclopia (ALMEIDA *et al.*, 1999).

It is understood that the spread of defective genes compromises not only nearby fetuses that will manifest congenital anomalies, but also the general economy of the farms in question, since there is a loss of animals and consequently production. Thus, it is noted that the supervision of these disorders by health programs is of short importance so that the genetics of animals is increasingly refined and the livestock economy is preserved (SCHILD; MARCOLONGO-PEREIRA, 2009).

This study aims to report the occurrence of a case of cyclopia in goat (*Capra aegagrus hircus*) that occurred in the state of Maranhão.

2 CASUISTRY

This report is about a newborn goat, male, who was born with only one eye and died shortly after his birth. This eye was large, being a single orbital fossa, located in the central region of the frontal bone, demonstrating the occurrence of a cyclopia. The animal also had a structure similar to a nasal device, in which it resembled a small trunk.

This animal comes from a cross between a female of the Santa Inês breed with a male of the Dorper breed, which had no consanguinity, because the female originated from another property. Until the case occurrence, no similar case or any other malformation had been reported in the animals of the herd of the property.

The farm is a small dairy property in the city of São Bernardo - MA, which operates only with domestic breeding, not having any veterinary accompaniment in the herd, and with this, the property does not have adequate control of the main sanitary measures that are necessary in a goat breeding. In the property the breeding system used is the rotation of pasture, with feeding of bean straw, wheat bran, forage cane and mineral salt at will.

3 DISCUSSION

The animal reported in this case is of the goat species, according to Rashed *et al.* (2014) who say that cyclopia can occur in goats, however, this report disagrees with what is cited by Orioli *et al.* (2011) and Khaksary (2012), which say that cyclopia has a greater number of reports in the literature in relation to humans, not pointing out occurrence in goats.

In this report, the animal was born with a large eye, possessing only a single orbital fossa located in the central region of the frontal bone, demonstrating the occurrence of a cyclopia, agreeing with Pacheco *et al.* (2011) who claim that cyclopia is an anomaly characterized by a facial deformity having the junction of its two eyeballs, turning into a single large orbit in the central region of the forehead.

The animal in this case also had a structure similar to a nasal device, in which it resembled a small trunk, according to Almeida *et al.* (1999), which confirm that animals with cyclopia, in addition to presenting facial deformity and a single large orbit in the region of the middle line of the face, also have a formation of a proboscis that looks like a tubular nasal apparatus or a trunk.

In this report, the animal died shortly after birth, agreeing with Pacheco *et al.* (2011), who say that animals with cyclopia are incompatible with life.

In this case, the reported animal was born a cross between a female goat of the Santa Inês breed with a male of the Dorper breed, who had no consanguinity, besides that, there was never any similar case or any other malformation in the animals of the herd of the property, which makes it impossible to affirm the etiology of this occurrence, as stated by Radostits *et al.* (2007) and Schild (2006) who say that several anomalies happen randomly, without at least having a concrete cause.

4 CONCLUSION

The occurrence of most congenital defects, as in the case of cyclopia, is not yet well defined, because several factors can act negatively in the development of the fetus, especially problems related to changes in the maternal organism. Therefore, we cannot affirm that congenital malformations are only due to hereditary factors, but also to environmental factors that may influence in the course of fetal development.

Therefore, we can conclude that congenital defects are usually easily recognized by observing evident morphological changes, such as cyclopia, but it is very difficult to define the specific cause of this genetic disorder.

ATTACHMENTS

Figure 1 - Photo of the reported goat presenting the cyclopia anomaly



Source: Personal archive, 2020.

Figure 2 - Enlarged photo demonstrating the anomaly reported in the newborn



Source: Personal archive, 2020.

REFERENCES

- ALMEIDA, J. M. Embriologia veterinária comparada, Ed. Guanabara Koogan Ltda: Rio de Janeiro, 1999. p. 78.
- BINNS, W.; JAMES, L. F.; SHUPE, J. L. et al. Cyclopien-type malformation in lambs. *Archives of Environmental Health*, v.5, n.2, p.106-108, 1962.
- CRISTO, A. B.; LEMKE, B. V.; PERINI, R. et al. Ciclocefalia em bovinos - relato de caso. *Revista Científica Eletrônica de Medicina Veterinária*, Ano X, n. 19, p. 1-7, 2012.
- EVANS, H. E. Cyclopia, situs inversus and widely patent ductus arteriosus in a new-born pig, *sus scrofa*. *Journal of Veterinary Medicine, Series C*, v. 16, n. 3, p. 221- 226, 1987.
- MAHABADY, M. K.; BARATI, F. Multiple congenital cephalic defects in a calf. *Asian Journal of Animal and Veterinary Advances*, v. 7, n. 8, p. 767-770, 2012.
- NJOKU, C. O.; ESIVEO, K. A.; BIDA, S. A. et al. Canine cyclopia. *Veterinary Record*, v. 102, n. 3, p. 60-61, 1978.
- ORIOLI, I. M.; AMAR, E.; BAKKER, M. K. et al. Cyclopia: an epidemiologic study in a large dataset from the international clearinghouse of birth defects surveillance and research. *American Journal of Medical Genetics Part C*, v.157, p. 1-14, 2011.
- OZCAN, K.; GURBULAK, K.; TAKCI, I. et al. Atypical cyclopia in a brown Swiss cross calf: A case Report. *Anatomy Histology Embryology*, v. 35, n.3, p. 152-154, 2006.
- PACHECO, A. M.; HAMZÉ, A. L.; MARIANO, R. S. G. et al. Ciclopia em bovinos - relato de caso. *Revista Científica Eletrônica de Medicina Veterinária*, Ano IX, n. 16, p. 1-5, 2011.
- RADOSTITS, O. M.; GAY, C. C.; HINCHCLIFF, K.; W. et al. *Veterinary Medicine: A textbook of the diseases of cattle, horses, sheep, pigs, and goats*. 10.ed., Missouri, Saunders: Elsevier, 2007. p. 132.
- RASHAD, R.; AL-KAFIFY, M.; ABDELLAH, B. et al. Cyclopia of Goat: Micro and Macroscopic, Radiographic and Computed tomographic studies. *Alexandria Journal of Veterinary Sciences*, v.42, n.1, p. 1-10, 2014.
- SCHILD, A. L. Defeitos Congênitos. In: RIET-CORREA; SCHILD, A. L.; MENDEZ, M. D. C.; LEMOS, R. A. A. *Doenças de ruminantes e equinos*. 2.ed., São Paulo: Livraria Varela, volume 1, p. 19-23, 2006.
- SCHILD, A. L.; MARCOLONGO-PEREIRA, C. Defeitos congênitos e doenças hereditárias em ruminantes: importância econômica e epidemiologia na região sul do rio grande do sul. XXXVII Jornadas Uruguayas de Buiatria, Anais[...], FVET, Universidad de la República Uruguay, Paysandú, Uruguai, p. 1-4, 2009.

THIPPERSWAMY, T.; PRASAD, R. V.; KAKADE, K. A clinical case of cyclopia prostomus archynchus in a buffalo calf (*Bubalus bubalis*). Indian Veterinary Journal, v. 73, n. 6, p. 674-676, 1996.

WAMMES, J. C. S.; FILADELPHO, A. L.; BIRCK, A. J. et al. Ciclopia em suínos - relato de caso. Revista Científica Eletrônica de Medicina Veterinária, Ano X, n. 19, p. 1-7, 2012.