AMELIA OF HIND LIMBS IN A BUFFALO CALF - A CASE REPORT

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Amelia - the total absence of limbs - is a rare congenital malformation diagnosed in domestic animal neonates. In cattle, only cases of hemimelia (the absence of a portion of a limb) and deformities of hind limbs have been reported recently by Lapointe *et al.* (2000) and Vermunt *et al*. (2000). Congenital defects are structural or functional abnormalities and can affect on isolated portion of a body system, entire system or parts of several systems and may cause obstetrical problems (Long, 2001). Limb deficiency defects are relatively rare, particularly in chromosomal aberrations such as segmental autosomal monosomies or trisomies. The etiology of limb malformation includes genetic factors, environmental agents or a combination of both (Newman *et al*., 1999). In humans, some limb anomalies are inherited, and genes responsible for the anomalies have been identified. There are also reports indicating that chromosomal aberrations are associated with congenital limb malformations (Manouvrier-Hanu *et al.*, 1999). This communication places on record such a rare case of hind limb Amelia in a buffalo calf.

CASE HISTORY AND OBSERVATIONS

A 9-yrs old 5th parity Mehsana buffalo of Kasumbad village in Anand District was reported to have delivered a male live calf naturally with absence of hind limbs at full term of gestation some 15 days ago (Fig. 1). According to case history, the calf was conceived and born full term following natural service. Except limb defects, the calf was normal, taking milk, with normal urination, defecation etc. The karyotyping of blood sample did not reveal any chromosomal abnormality.

DISCUSSION

Critical review of literature revealed that the information regarding amelia in domestic animals is very scanty in India and elsewhere, and the incidence is still a rare one in buffalo calf. Amelia is a rare condition with an incidence range from 0.053 to 0.095 in 10,000 live births in human (Kallen *et al.,* 1984), while congenital limb defects are rare fetal anomalies with prevalence of 0.55 per 1,000 birth (Riyami *et al*., 2012). The incidence of spontaneous Amelia in rodents has been observed

Fig. 1. Mehsana buffalo male calf with absence of hind limbs

to be in the order of 0.1-0.3 per cent (Szabo, 1989). Szczerbal *et al*. (2006) reported a Holstein-Friesian male calf with the congenital total absence of thoracic limbs that was attributed to unusual spontaneous instability of Xq24 chromosome region. Mosbah *et al.* (2012) reported a case of amelia (abrachia) affecting newly born buffalo calf with absence of both forelimbs. The calf was unable to stand and also had an umbilical eventration.

During the embryonic stage of development, limbs arise as a condensation of cells from the lateral plate mesoderm and its ectodermal covering (Al-Qattan *et al.*, 1998). The limb origin in amniotes develops from the wolffian ridges, which run along the lateral surface of the body (Al-Qattan *et al.*, 1998). The most extreme form of abnormality of the extremities is total absence (amelia); this is rare and may be associated with other no- limb malformations owing to mendelian inheritance or chromosomal aberrations. Limb abnormalities are broadly divisible into three categories, reduction defects, duplication defects and dysplasias (Larsen, 1997). The most extreme form of reduction defect is amelia, in which the entire limb is absent. Overall limb length may be shortened due to partial absence of the limb skeleton, meromelia, or stunting the development of long bones, termed hemimelia.

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