Investigation of lumpy skin disease virus infection in young calves from cows vaccinated with sheep poxvirus vaccine

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Abstract:

Lumpy skin disease (LSD) is an important infectious viral skin disease of cattle causing high economic losses. Vaccination is the only effective method to control the disease in endemic countries. In the present study, 10 out of 25 clinically examined calves (40%) in a farm in Dakahlia Governorate, Egypt during summer 2013 showed clinical signs suspected to be lumpy skin disease, despite vaccination of dams 4 months before parturition with sheep poxvirus vaccine (Kenyan strain). The diseased calves showed localized or generalized skin nodules with or without fever. Skin lesions were collected from clinically diseased calves for virus isolation in embryonated chicken eggs for three passages followed by ten successive passages in Madin Darby Bovine Kidney (MDBK) and identification of isolated virus was done by indirect immunofluorescence test. The serum antibody titers were determined by serum neutralization test (SNT) and Enzyme linked immunosorbant assay (ELISA) in calves and also their dams. The results confirmed infection of calves with lumpy skin disease virus (LSDV) and showed that calves older than 3 months old age and those out of first calf heifers are more susceptible for infection. Some calves even with insufficient amount of maternal antibodies could be protected from infection. In conclusion, this study revealed that the maternal immunity may disappear before six months and make the calves vulnerable for infection. So further study should be directed toward identifying the optimal age at which LSD vaccination should be started and also on the role of passively transferred cell mediated immunity in protection of calves against infection with LSDV.

Keywords:

ELISA, Immunofluorescence test, Lumpy skin disease, Maternal immunity, Sheep poxvirus vaccine, SNT.

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