INFLUENCE OF MATERNAL ANTIBODIES ON FIRST VACCINATION OF PUPS AGAINST RABIES

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Abstract

Twenty pups of age group 10 to 12 weeks were selected for the study. All the pups were weaned only after four weeks of age ensuring consumption of sufficient quantity of colostrum. Serum samples collected were subjected to Rapid fluorescent focus inhibition test (RFFIT) for the presence of virus neutralizing antibodies against rabies virus. Antibody levels in all the pups were found to be between 0.01 ± 0.04 IU/ml indicating titres insufficient for interference with antibody production subsequent to vaccination. Significance of the findings is discussed.

Key words: *RFFIT, neutralizing antibody*

Rabies is caused by *Lyssa virus* of the family *Rhabdoviridae.*All warm-blooded animals are susceptible to rabies virus, but dogs, bats, skunks and racoons were the vectors and reservoirs of the disease (Tordo, 1996).Transmission of rabies from dog to dog was through direct bites (Morters *et al*., 2014). Okonko *et al*. (2010) opined that pre and post exposure prophylaxis was the primary step in preventing rabies in dogs and further transmission to human beings. Veterinary council of India recommended pre exposure prophylaxis against rabies in dogs and cats with inactivated vaccine, given at 3 months of age with a booster dose at 1 year, followed by revaccination once in every two years. Recommended age of first vaccination against rabies is three months throughout the world. This is arrived by considering the possibility of persistence of maternal antibodies till 12 weeks of age. This study was conducted to find out whether the maternal antibodies in pups persist up to 12 weeks of age.

Materials and Methods

Twenty healthy, unvaccinated pups of age group 10 to 12 weeks brought to University Veterinary Hospital, Mannuthy and Kokkalai were included in the study. Upon clinical examination all the animals were found to be healthy. The whole blood was collected from cephalic/saphenous vein from all the animals without anticoagulant for separation of sera and stored in -20 ^{0}C till use. The serum samples were subjected to rapid fluorescent focus inhibition test to estimate the presence of virus neutralizing antibody.

Rapid fluorescent focus inhibition test

The test was carried out using the method according to Smith *et al*. (1996). All the

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sera, including the reference sera and positive and negative controls, were examined on 96-well microtitration plates for cell cultures. Twenty microscopic fields in each well were observed for the presence of fluorescence. The number of fields containing fluorescence were counted. The serum end point titre and international units were calculated by comparing the control slide and test serum values. The obtained antibody titre was compared with the standard protective value by using one sample t test

Results and Discussion

Rabies persists as a dreaded global zoonosis because of its high incidence, world-wide distribution, treatment costs and mortality rate. Dogs are the reservoir host for this fatal disease and the risk of exposure to the disease is high in endemic countries like India because of the large stray dog population and close interaction of human beings with dogs. Immunization is the only way to prevent this disease in dogs and its transmission to human beings.

Comparison of mean antibody titre of unvaccinated pups with minimum prescribed protective value (0.5 IU/ml) showed that there is a statistically significant difference.

Table 1 Comparison of mean antibody titre of unvaccinated pups with minimum prescribed protective value (0.5 IU/ml)

Parameter	Mean	T value	P value
Antibody titre	0.01±0.004	110.5**	0.00

** - *significant difference at 0.01 level*

In the present study, all the animals were found to have non-significant antibody titre in comparison with standard protective level, at the age of 10 to 12 weeks irrespective of the vaccination history of bitch. It clearly indicated that maternal antibodies have no significant influence on the vaccination. But Kallel *et al.* (2006) observed mean neutralizing antibody titre of 0.8 IU/ml on day 0 with 30 per cent of sero-conversion in his field trial consisting of thousand dogs which reflected prior poor vaccination. Unvaccinated animals does not have neutralizing antibody titre (Ondrejkova*et al.,* 2002) (Cliquet *et al.,* 1998). Singh *et al.*(2011) observed one per cent of sero conversion in stray dogs.

Primary vaccination against rabies is usually advised to pups of 3 to 4 months age to avoid maternal antibody interference for the development of immune response Sykes and Chomel, (2014). All the animals having insignificant antibody titre showed that sufficient titre of maternal antibodies were not persisting at the age of 10-12 weeks. Interestingly maternal antibodies were not observed even in pups born to previously vaccinated bitches. The presence of maternal antibody depends upon many factors which include health status of bitch, quality and quantity of colostrum secreted and quantity of colostrum ingested by pups, previous history of vaccination (Muller *et al.*, 2002). The finding in the study realised the importance of early vaccination especially in the endemic countries like India.

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