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Epidemiological Survey of Feline Leukemia Virus in Domestic Cats on Tsushima Island, Japan: Tsushima Leopard Cats Are at Risk

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Abstract : The Tsushima leopard cat (TLC) Prionailurus bengalensis euptilurus, designated a National Natural Monument of Japan, inhabits Tsushima Island, Nagasaki Prefecture, Japan. TLC is considered a subspecies of P. bengalensis, and lives only on Tsushima Island. TLCs are threatened by various infectious diseases. Feline leukemia virus (FeLV) causes a serious infectious disease with a poor prognosis in cats. Therefore, the transmission of FeLV from Tsushima domestic cats (TDCs) to TLCs may threaten the TLC population. We investigated the FeLV infection status of both TDCs and TLCs on Tsushima Island by screening blood samples for FeLV p27 antigen and using PCR to amplify the full-length FeLV env gene. The prevalence of FeLV was 6.4% in TDCs and 0% in TLCs. We also demonstrated that the virus can replicate in the cells of TLCs, suggesting its potential cross-species transmission. The viruses in TDCs were classified as genotype I/clade 3, which is prevalent on a nearby island, based on previous studies of FeLV genotypes and FeLV epidemiology. The FeLV viruses identified on Tsushima Island can be further divided into two lineages within genotype I/clade 3, which are geographically separated in Kamijima and Shimojima, indicating that FeLV may have been transmitted to Tsushima Island at least twice. Monitoring FeLV infection in the TDC and TLC populations is highly recommended as part of the TLC surveillance and management strategy.

Keywords : epidemiology, Feline leukemia virus, Tsushima Island, wildlife management
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