

SYNANTHROPIC PRIMATES AND PATHOGEN HOST SWITCHES: ENTEROVIRUSES IN BANGLADESH

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In Bangladesh, free-ranging macaques, are often synanthropic with humans, meaning that they flourish in ecological niches created when humans alter the environment. Cross-species transmission of infectious agents can occur between humans and nonhuman primates (NHPs) wherever they come into contact. Ongoing research at the Centers for Disease Control and Prevention, as part of the World Health Organization's surveillance for acute flacid paralysis, has previously isolated several human-derived enterovirus strains (EV76, EV89, EV90, and EV91), that closely resemble simian enteroviruses characterized in the 1950-70's, suggesting the possibility of zoonotic transmission of viruses. To investigate the prevalence of enteric picornaviruses in NHPs, we collected a total of 763 NHP fecal specimens at 17 locations in Bangladesh between January 2007 and June 2008. These fecal samples did not come from identified individuals. Feces from 12 NHP taxa were analyzed. NHP species, date of collection, context of contact with humans, and GPS coordinates were recorded for each specimen. Enteric picornaviruses were detected using real-time PCR and typed by VP1 sequencing. Enteroviral infection was found in 82 specimens (10.7%). 32 distinct enteroviral strains, 29 known "human" and three known "simian" were identified. Enteroviruses were detected in 57.0% of specimens from zoo NHPs, 4.1% of specimens from temple monkeys, 4.8% of specimens from urban monkeys (including EV76, EV89, EV90), and 2.7% of specimens from wild monkeys. Free-ranging, synanthropic NHPs showed evidence of infection with only human EVs. In contrast, only zoo NHPs show evidence of infections with known simian EVs. Distribution of enteroviruses among the NHPs sampled in Bangladesh is characterized almost entirely by their ecological context.

Keywords: Primate retroviruses, *Macaca*, pets, ethnoprimateology