SIV INFECTION IN SOOTY MANGABEYS DOES NOT IMPACT SURVIVAL BUT CHANGES CAUSE OF DEATH.

365

Cristina Ceriani[1], Brianne Beisner[1], Maria Crane[1], Joyce Cohen[1], Ian N. Moore[1], Deanna A. Kulpa[1,2], Guido Silvestri[1,2].

[1] *Emory National Primate Research Center, Emory University, Atlanta, GA.* [2] Department of Pathology & Laboratory Medicine, Emory School of Medicine, Emory University, Atlanta

BACKGROUND

Natural SIV infections of sooty mangabeys (Cercocebus atys, SM) is carachterized by:

- absence of immunological control and high plasma viral load
- resistance to simian AIDS progression due to:
  - absence of chronic immune activation
  - low levels of microbial translocation
  - selective preservation of specific CD4+ T cell subsets

METHODS

Systematic analysis of the causes of death in 307 SMs (219 SIV-infected and 88 uninfected) that were housed at ENPRC and have died of natural causes between 1986 and 2022.

We used clinical and pathological observations, as well as necropsy reports to classify causes of death into six major categories: cardiovascular, infectious diseases, neoplasia, diabetes, trauma, and "others/unknown".

	Total	(%)	SIV +	(%)	SIV -	(%)
Total	307		219	(71.3%)	88	(28.7%)
Females	175	(57.0%)	126	(41.0%)	49	(16.0%)
Males	132	(43.0%)	93	(30.3%)	39	(12.7%)
Adult (3-15 years old)						
Total	116	(37.8%)	74	(63.8%)	42	(36.2%)
Females	62	(53.4%)	38	(32.8%)	24	(20.7%)
Males	54	(46.6%)	36	(31.0%)	18	(15.5%)
Elderly (≥ 15 years old)						
Total	191	(62.2%)	145	(75.9%)	46	(24.1%)
Females	113	(59.2%)	88	(46.1%)	25	(13.1%)
Males	78	(40.8%)	57	(29.8%)	21	(11.0%)

Table 1: Characteristics of studied sooty mangabeys.

RESULTS

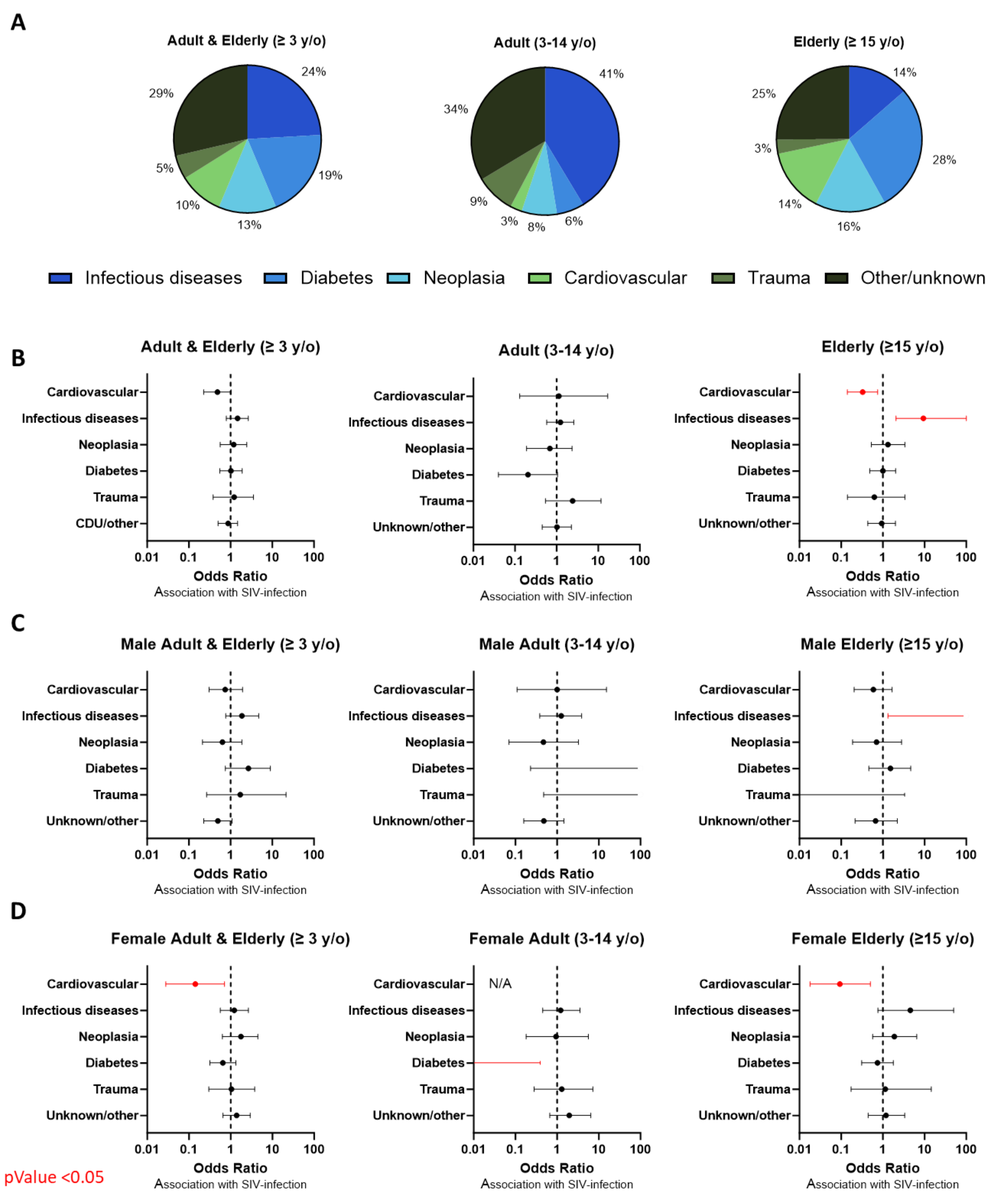

Figure A: frequency of COD in Adult & Elderly (>3 y/o), Adult (3-14 y/o) and Elderly (≥ 15 y/o) groups.

Lower frequency of deaths caused by **cardiovascular diseases and diabetes, and higher** frequency of deaths caused by **infectious diseases in SIV-infected SMs** compared to uninfected.

Figure B: Association of COD with SIV-infection in Adult & Elderly (>3 y/o), Adult (3-14 y/o) and Elderly (≥ 15 y/o) groups.

- trend toward a **lower frequency of cardiovascular disease** (OR 0.48, 95% CI 0.23-1.02, P = 0.087) in Adult & Elderly (>3 y/o), which reach statistical significance the Elderly group (OR 0.32, 95% CI 0.14-0.75, P = 0.013).
- in Adult group trend towards **decreased risk of death from diabetes** (OR 0.21, 95% CI 0.04-1.05, P = 0.097)
- in Elderly group statistically significant **association with infectious diseases** (OR 9.37 95% CI 2.07- +infinity, P = 0.006). No evidence of specific epidemic events, defined as caused by a common pathogen within a restricted period of time.

Figure C: Association of COD with SIV-infection in Male.

- confirmed **significant association of infectious disease** (OR +infinity, 95% CI 1.32- +infinity, P = 0.030) in Elderly group (≥ 15 y/o).

Figure D: Association of COD with SIV-infection in Female.

- statistical **lower frequency of cardiovascular disease** in Adult & Elderly group (OR 0.14, 95% CI 0.03-0.71, P = 0.019) which is confirmed in the Elderly group (OR 0.09, 95% CI 0.02-0.50, P = 0.006), suggesting that sex distribution and female sex's protective role from cardiovascular disease were not confounding factors.
- Statistical **lower frequency of death from diabetes** in Adult & Elderly group (OR 0.00, 95% CI 0.00-0.039, P = 0.007)

CONCLUSIONS

While fully confirming the non-pathogenic nature of SIV infection in SMs, these data reveal, for the first time, a qualitative impact of SIV infection on the host physiology that induces significant changes in the mortality pattern in these natural SIV hosts.

ACKNOWLEDGMENTS: We thank all animal care and veterinary staff at the Emory National Primate Research Center (ENPRC); Research reported in this publication was supported by the National Institute of Allergy and Infectious Diseases of the National Institutes of Health under award number P51 OD011132 (to the ENPRC), by HHS/National Institutes of Health (NIH) (R37 AI66998 to G.S.).

Contact information: cristina.ceriani@emory.edu