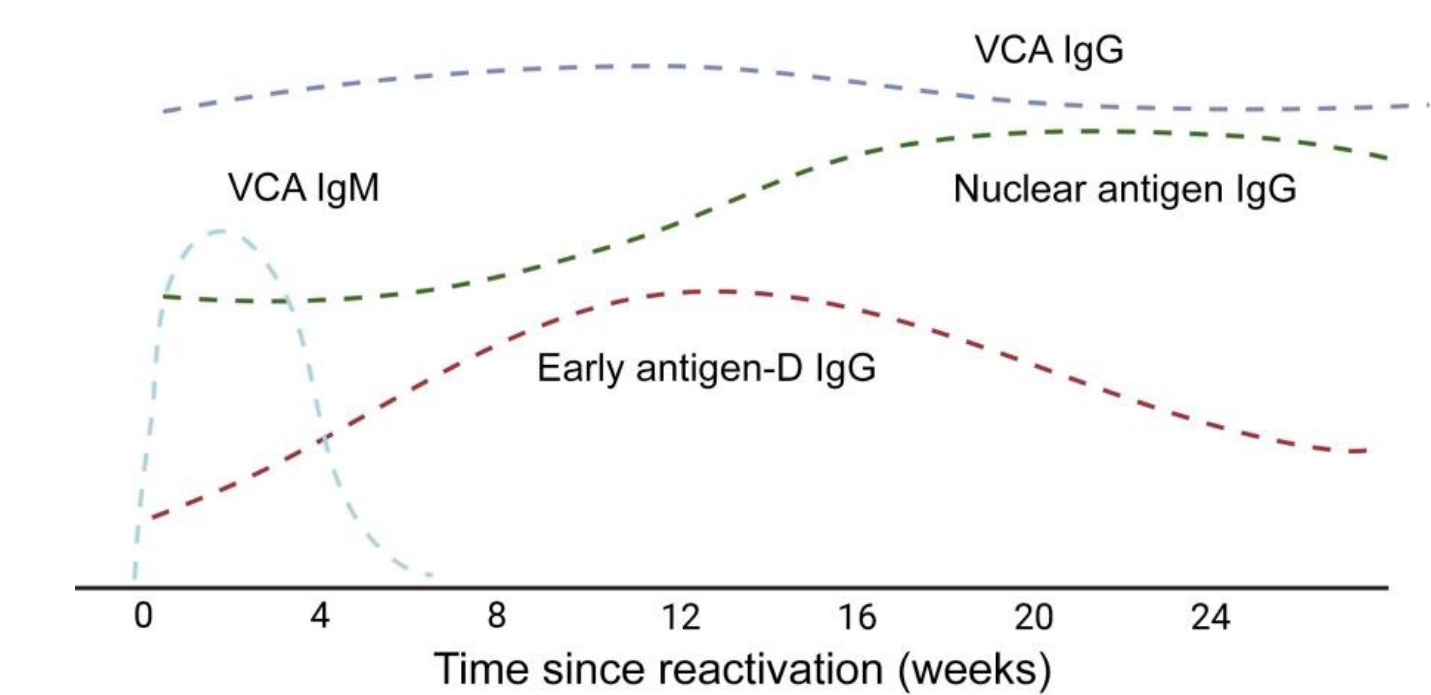


Serologic evidence of Epstein-Barr Virus reactivation during acute COVID-19 in comparison to household contacts

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BACKGROUND

- Epstein-Barr Virus (EBV) is a herpesvirus that infects >90% of adults in the US
- EBV reactivation may occur in response to stressors like sepsis and acute infection
- Reactivation can be measured directly (PCR) or indirectly (serology)



- Reactivation connected with Long COVID, suggesting COVID-19 sets off EBV; few studies have examined this directly
- Hypothesis: EBV reactivation more likely in COVID-19 cases than contacts

METHODS

Population:

- 123 participants from UCSF FindCOVID
- Cases enrolled within 5 days of COVID-19 symptom onset (n=81)
- COVID-negative household contacts (n=42) of confirmed cases

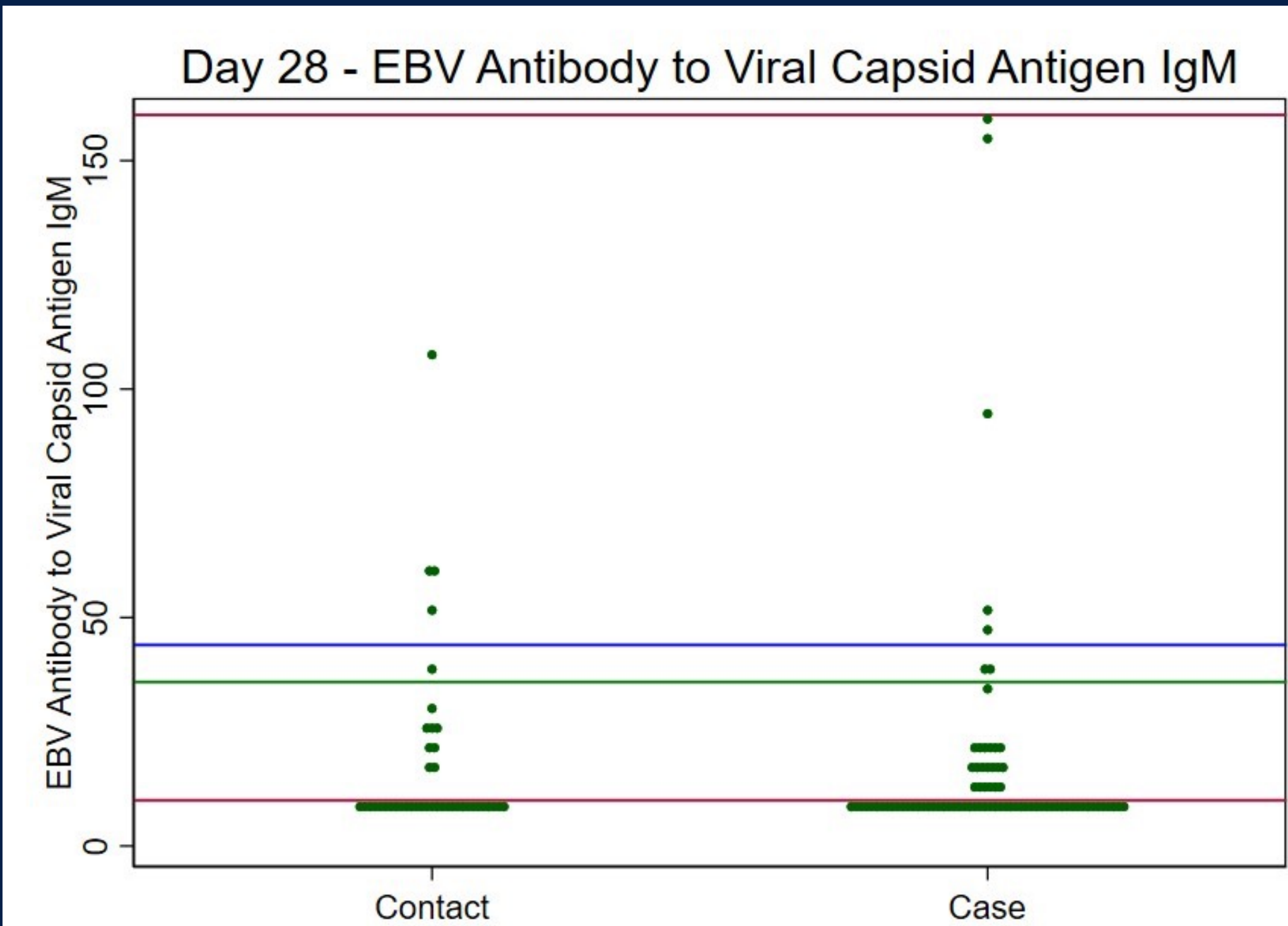
Measurements:

- Serum samples collected at Day 28 (D28), EBV serologies (VCA IgM, VCA IgG, EA-D IgG, EBNA IgG) measured by ARUP

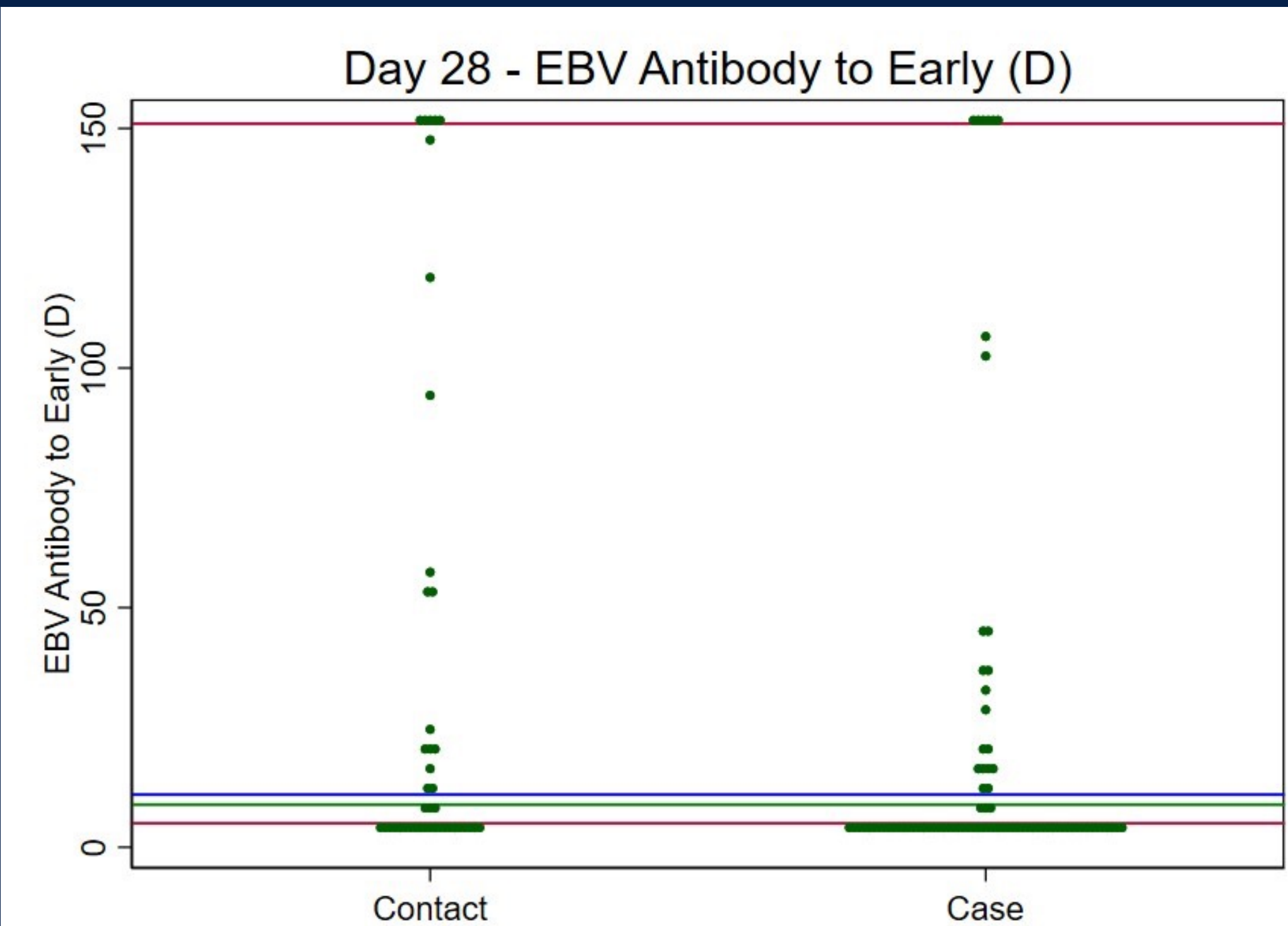
Analysis:

- Compared EBV antibodies between cases and contacts using Chi-square tests

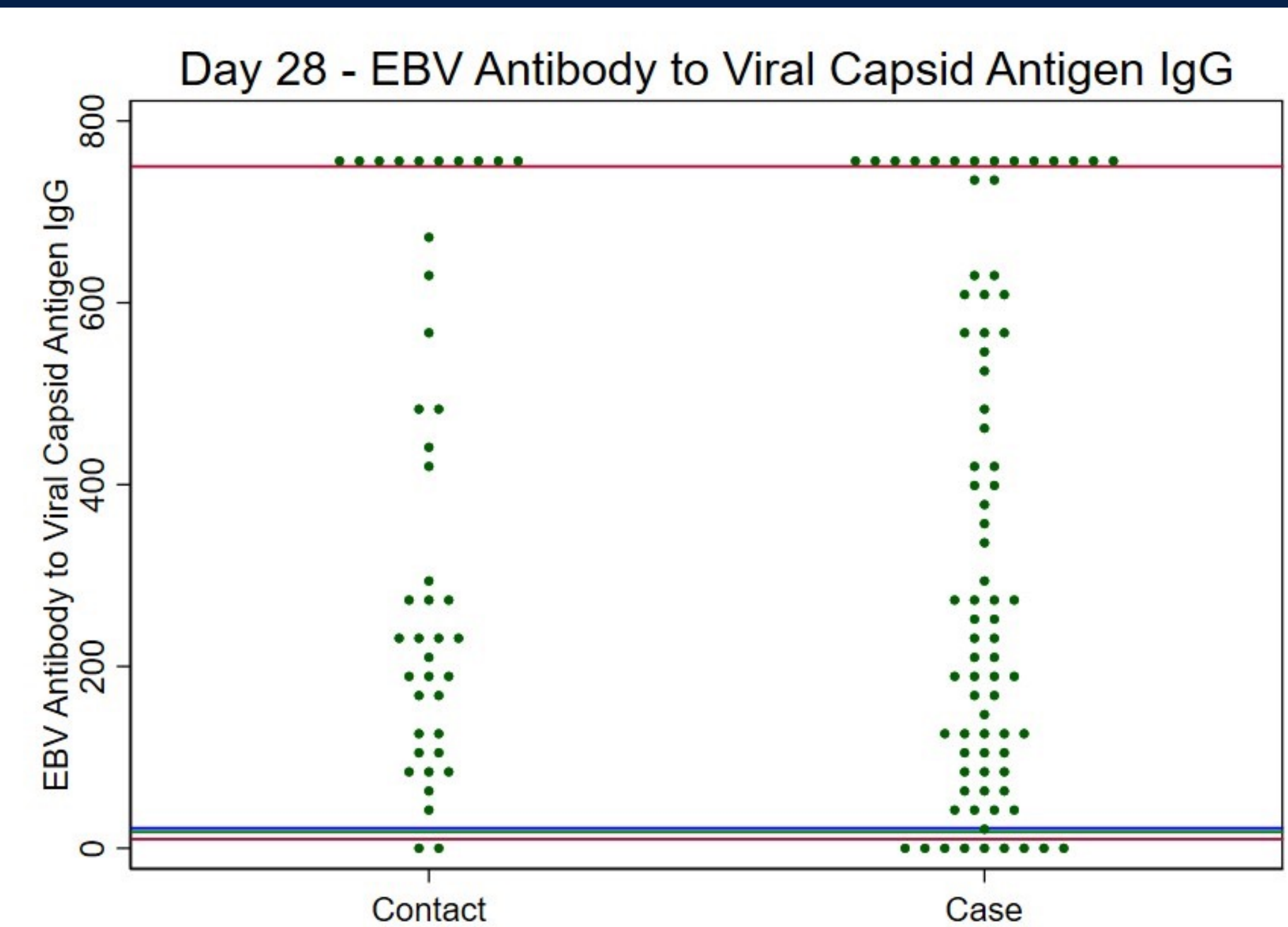
COVID-19 cases and household contacts had similar detection of EBV antibodies using D28 blood samples



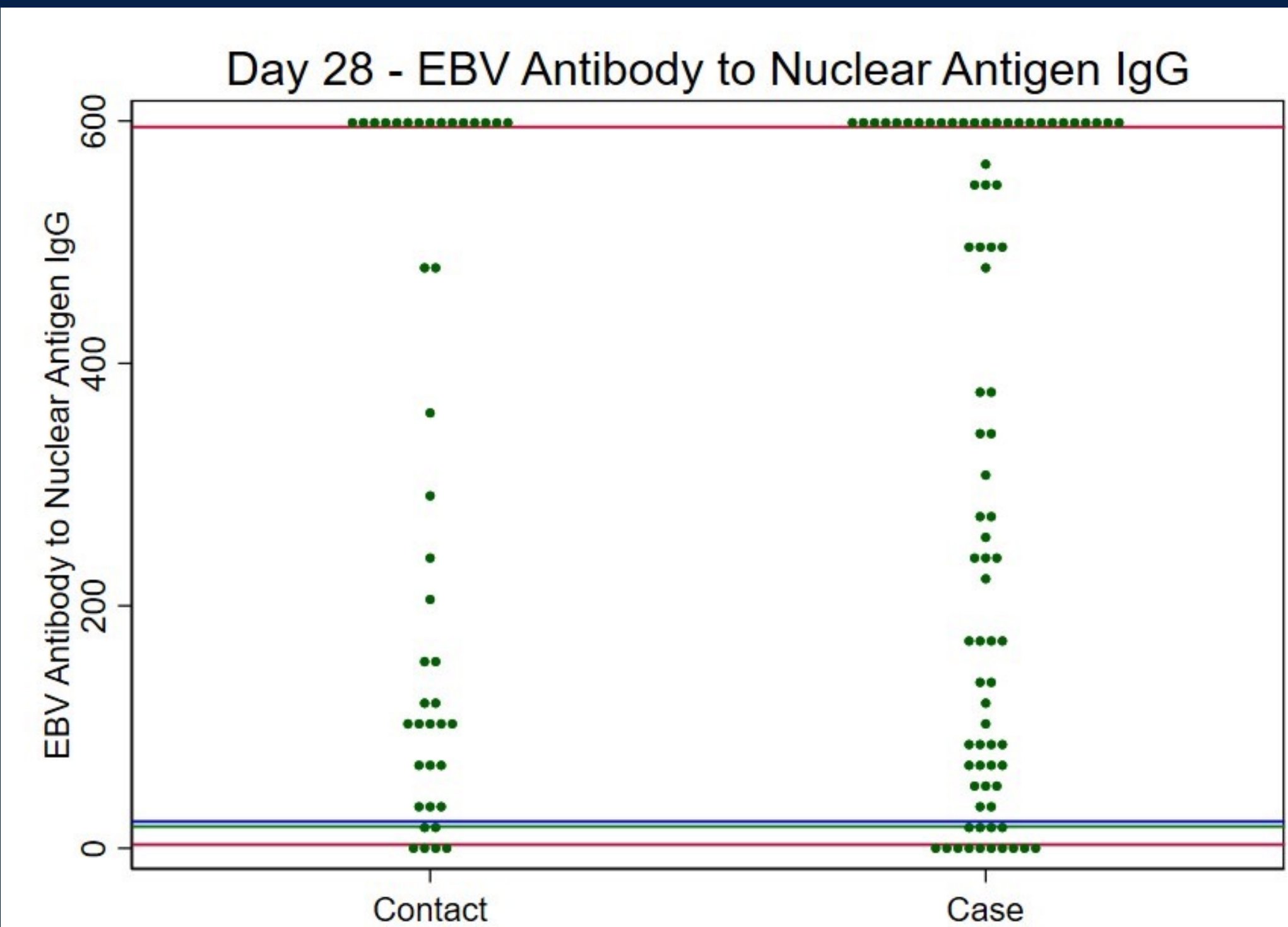
	Total	COVID+	COVID-
Above Limit of Detection (RED)	45/123 35%	30/81 37%	13/42 31%
Above Indeterminate Threshold (GREEN)	12/123 10%	7/81 9%	5/42 12%
Above Test Positive Threshold (BLUE)	9/123 7%	5/81 6%	4/42 10%



	Total	COVID+	COVID-
Above Limit of Detection (RED)	54/123 44%	32/81 40%	22/42 52%
Above Indeterminate Threshold (GREEN)	42/123 34%	22/81 27%	20/42 48%
Above Test Positive Threshold (BLUE)	39/123 32%	22/81 27%	17/42 40%



	Total	COVID+	COVID-
Above Limit of Detection (RED)	112/123 91%	72/81 89%	40/42 95%
Above Indeterminate Threshold (GREEN)	112/123 91%	72/81 89%	40/42 95%
Above Test Positive Threshold (BLUE)	111/123 90%	71/81 88%	40/42 95%



	Total	COVID+	COVID-
Above Limit of Detection (RED)	111/123 90%	73/81 90%	38/42 90%
Above Indeterminate Threshold (GREEN)	107/123 87%	69/81 85%	38/42 90%
Above Test Positive Threshold (BLUE)	105/123 85%	68/81 84%	37/42 88%

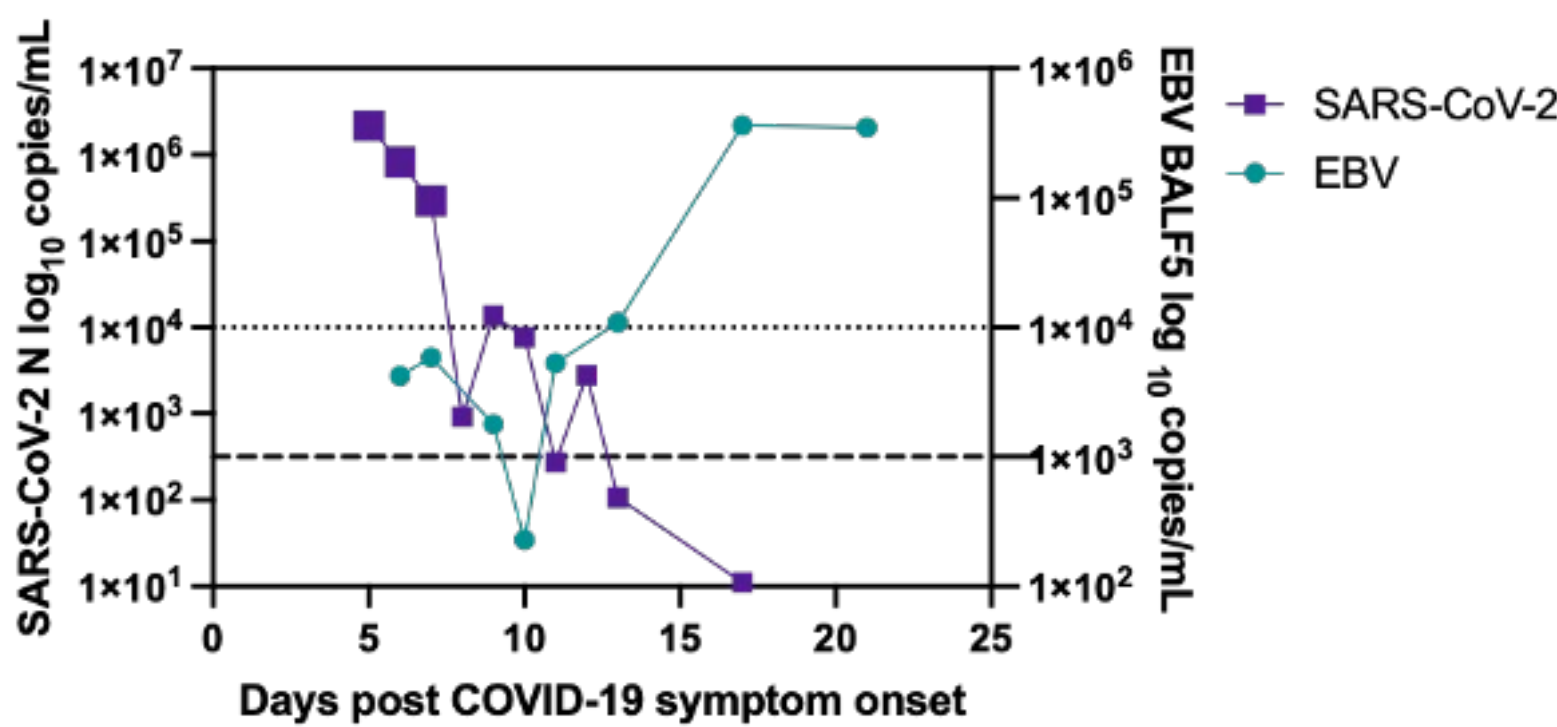


DISCUSSION

- We found no significant differences in detection of EBV antibodies at D28 between cases and contacts
- Explanations: D28 timing suboptimal (too early or late), outpatient cases too mild for EBV reactivation to occur, protective immune events in contacts increasing EBV reactivation
- Both groups had higher-than expected levels of markers of EBV reactivation
- EBV reactivation may depend on other factors, including tissue viral load and co-morbidities

FUTURE PLANS

- Evaluate direct measures of EBV in saliva of cases and contacts to better understand who has EBV reactivation



- Determine relationship between direct measures of EBV reactivation (PCR) and indirect measures (serology)
- Assess EBV serologies at alternative timepoints (D14, D21, M4)
- Determine whether D28 EBV serologies are associated with Long COVID symptoms such as fatigue and brain fog at M4