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Orthopoxvirus-Specific IgG Upon Mpox Vaccination Among People With and Those Without HIV

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BACKGROUND

- Taiwan had implemented nationwide routine and compulsory smallpox vaccination with Lister strain for >5 decades, which was stopped in 1979.
- Domestic cases of Mpox in the GBMSM community started to emerge in March 2023.
- A two-dose Mpox vaccination administered at an interval of at least 28 days is currently recommended as pre-exposure prophylaxis in the high-risk populations in Taiwan.

METHODS

- Men who have sex with men (MSM) planning to receive two doses of MVA-BN vaccine were enrolled.
- Participants were screened for the occurrence of Mpox through the reporting system of notifiable diseases of Taiwan CDC. In addition, those with suspicious lesions were tested for MPVX PCR at out-patient clinics of infectious diseases.
- Blood samples were collected on D0, 28±7, 96±7 and 196±7 for all participants after each dose. All serum specimens were tested for the presence of anti-A29 MPVX IgG.
- Those with a positive result of anti-A29 MPVX IgG before vaccination considered as an asymptomatic carrier and were excluded from the subsequent analysis.

Table 1. Clinical characteristics of the participants

	Total (N=426)	PWH (N=272)	PWoH (N=154)	*p* value
Age (IQR), years	35 (30-40)	38 (34-43)	30 (27-32	**<0.001**
Born before 1979	67 (15.7)	63 (23.2)	4 (2.6)	**<0.001**
Complete 2 doses	415 (97.4)	265 (97.4)	150 (97.4)	0.99
Interval between 2 doses (IQR), days	37 (32-48)	35 (31-46)	40 (35-54)	**<0.001**
CD4 <350 cells/mm^3	NA	16 (5.9)	NA	NA
PVL >20 copies/mL	NA	49 (18)	NA	NA
Chronic hepatitis B	33 (7.9)	29 (10.8)	4 (2.7)	**0.002**
Anti-HCV positivity	46 (10.9)	45 (16.6)	1 (0.7)	**<0.001**
Acquiring other STIs within a year	251 (58.9)	191 (70.2)	60 (39.0)	**<0.001**

*PWH, people with HIV; PWoH, People without HIV

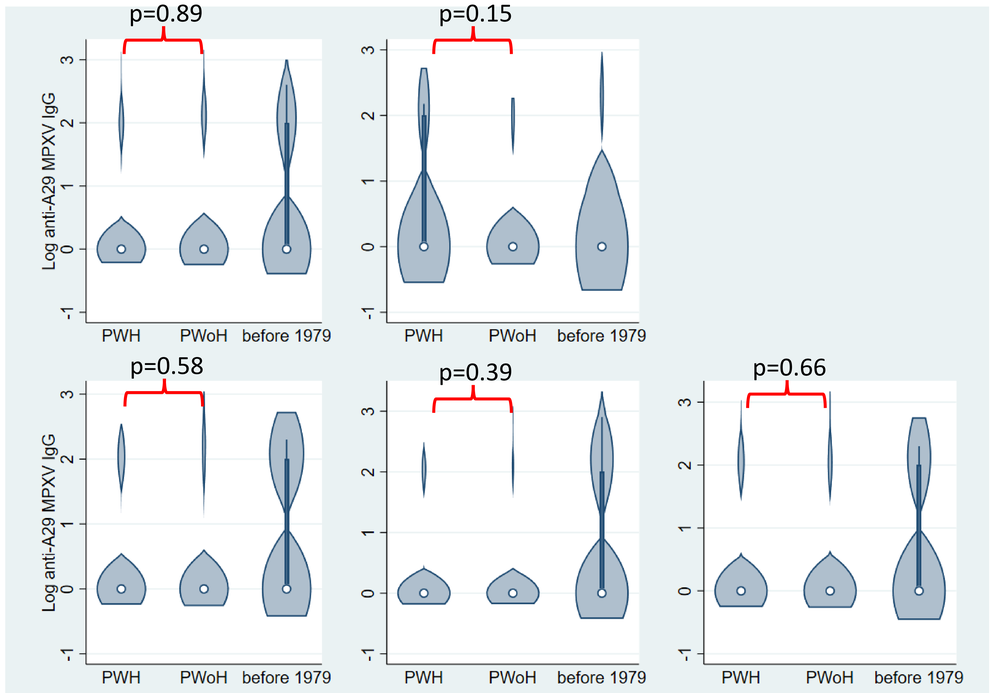

Figure 2. Evolution of anti-A29 MPXV IgG among PWH, PWoH and those born before 1979. (A) 1 month after 1st dose of vaccination. (B) 4 month after 1st dose of vaccination. (C) 1 month after 2nd dose of vaccination. (D) 4 month after 2nd dose of vaccination. (E) 7 month after 2nd dose of vaccination

RESULTS

- The study flow and participants' characteristics are shown in **Figure 1** and **Table 1,** respectively.
- Those born before 1979 had a higher rate of seroconversion after the 1st dose (adjusted odds ratio [aOR], 3.05; 95% CI, 1.53-6.09) and the 2nd dose (aOR, 6.29; 95% CI, 3.47-11.39) of MVA-BA vaccination.
- After excluding those born before 1979, similar rate of seroconversion of anti-A29 MPXV IgG was observed between PWH and PWoH **(Figure 2).**
- For those who failed to achieve seroconversion after the 1st dose of MVA-BN vaccination, PWH tended to be more likely to have seroconversion of anti-A29 MPXV IgG after the second dose of vaccination. However, the differences between the two groups did not reach statistical significance **(Table 2)**.

CONCLUSIONS

- The serological response of anti-A29 MPVX IgG among individuals receiving two doses of Mpox vaccination was higher in those who had had prior smallpox vaccination. For those born after 1979, OPXV-specific IgG was similar between virologically-suppressed PWH and PWoH.

Figure 1. Study population.

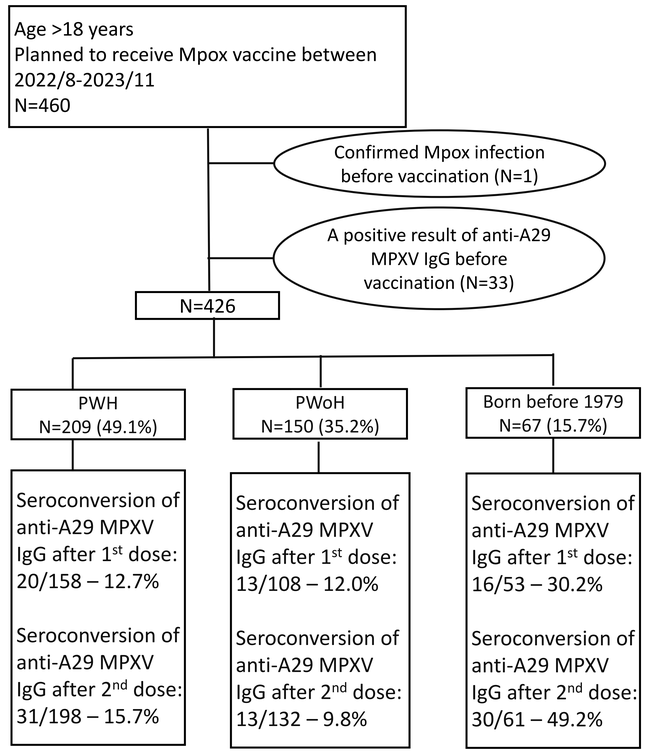

Table 2. Factors associated with seroconversion after the 2nd dose of MVA-BN vaccines among those who failed to have seroconversion after the 1st dose

	Univariable		Multivariable	
	OR (95% CI)	p value	aOR (95% CI)	p value
Born before 1979	**9.57 (3.82-23.96)**	**<0.001**	**5.47 (1.96-15.23)**	**0.001**
HIV infection	**6.57 (1.51-28.65)**	**0.01**	4.29 (0.94-19.61)	0.06
Chronic hepatitis B	**5.15 (1.86-14.23)**	**0.002**	2.25 (0.70-7.20)	0.17
Anti-HCV positivity	0.86 (0.19-3.92)	0.85	-	-
Type 2 DM	3.95 (0.72-21.54)	0.11	-	-
Chronic kidney disease	1.89 (0.21-16.85)	0.57	-	-
Malignancy	3.95 (0.72-21.54)	0.11	-	-

ADDITIONAL KEY INFORMATION

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