MVA Vaccine produces potent serological and immunological response to mpox in people living with HIV

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BACKGROUND & METHODS

- We investigated immune responses in PLWH **with past mpox infection (PI)** and those **vaccinated with two doses of MVA (Vax)** to better understand mpox immunity in PLWH.
- PI cohort (n=9) and Vax cohort (n=9) were sampled at single time-point ≥3 months post-infection or post-vaccination.
- IgG responses to 8 mpox virus (MPXV) and 3 vaccinia virus (VACV) antigens were measured using Luminex (Fig1,Fig2).
- IFN-γ CD4+ and CD8+ T-cell responses to MPXV specific and VACV specific antigens were measured using ELISPOT (Fig3).

Past infection produces potent IgG responses to mpox .

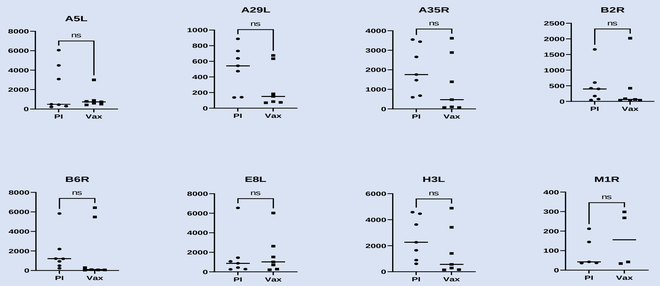


Figure 1. Median IgG responses to 8 MPXV antigens were comparable (p=>0.05) between PI and Vax cohorts.

Vaccination produces potent IgG responses to mpox.

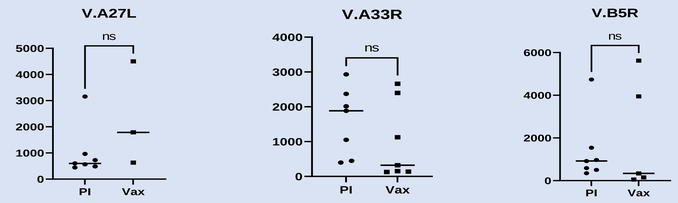


Figure 2. Median IgG responses were comparable (p=>0.05) between PI and Vax cohorts.

T-cell responses to mpox are higher in vaccinated PLWH compared to PLWH with past-infection.

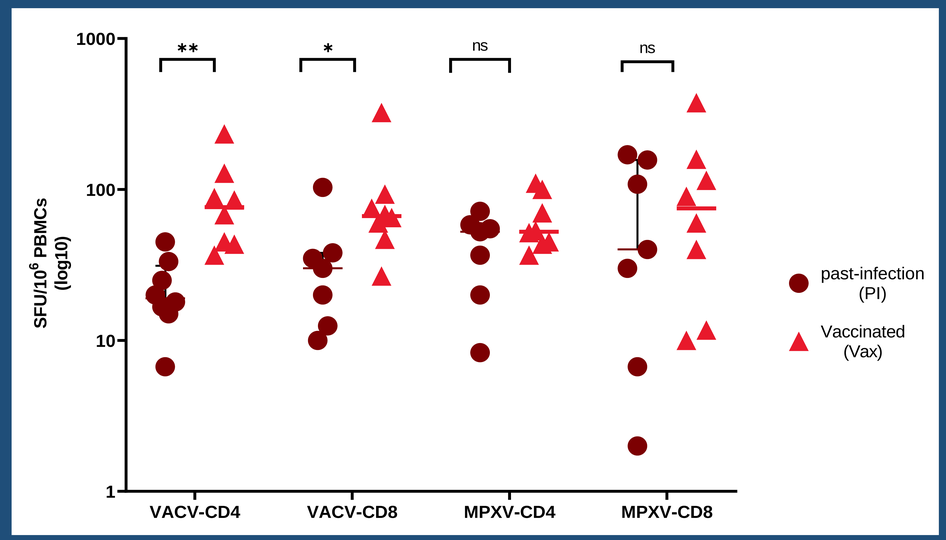


Figure 3. IFN-γ CD4+ and CD8+ T-cell responses to VACV peptides are significantly higher (p=<0.05) in Vax compared to PI cohort. No difference in CD4+ and CD8+ T-cell responses to MPXV peptides is observed between PI or Vax cohorts.

CONCLUSIONS

- Serological responses to mpox are comparable in PI and Vax cohorts (Fig1,Fig2)).
- MVA produces higher CD4+ and CD8+ T-cell responses to VACV peptides in Vax cohort compared to PI cohorts (Fig3).
- These findings highlight the importance of monitoring how these responses are sustained in PLWH.
- This work is relevant to an immunocompetent virally supressed cohort with no evidence of immune activation.
- Further research on efficacy and durability of vaccination in larger cohorts and PLWH without virological control should be prioritised.

RESULTS

- All participants (n=18) were male, virally suppressed (VL<50 c/mL), ART adherent, with no evidence of immunosuppression (median CD4:931, IQR:394-892, CD8:515, IQR:393-892).
- 16/18 participants produced potent IgG responses to MPXV and VACV antigens. No difference in serological responses was observed for 8 MPXV antigens 3 VACV antigens between PI and Vax cohorts (p=0.6) (Fig1 and Fig2).
- CD4+ and CD8+ T-cell responses (median, 95%CI) to VACV peptides were significantly higher (p=<0.05) in Vax cohort (46,13-200) compared to PI cohort (22,13-54) (**Fig3**). MPXV T-cell responses were comparable in PI and Vax cohorts (p=0.07).
- Notably, two vaccinated individuals who produced no IgG to the VACV antigens, produced potent VACV CD4 and CD8 T-cell responses.

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