A SINGLE DOSE OF THE MVA-BN SMALLPOX VACCINE INDUCES AN EARLY PROTECTIVE ANTIBODY RESPONSE SIMILAR TO A TRADITIONAL REPLICATING VACCINE AND IS A VACCINE FOR MONKEYPOX

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BACKGROUND

• More than 100 monkeypox (MPX) cases reported in Nigeria since 2017
• Travelers from Nigeria to the UK, Israel, and Singapore becoming ill; incidents of secondary transmission; no approved MPX vaccine at that time
• Vaccination with MVA-BN® post-exposure to MPX and for MPX prevention in ongoing trials:
  • Healthcare workers in England during the outbreak in 2018 (NCT03745131)
  • CDC sponsored trial in Africa (Democratic Republic of the Congo) (NCT02977775)
• Approval of MVA-BN® (JYNNEOS®) for prevention of MPX and smallpox (SPX) in September 2019 by FDA

MONKEYPOX

Protection Studies

POX-MVA-006 - Phase 3 Pivotal Clinical Trial (NCT01913353)

Immunogenicity

Non-inferiority of MVA-BN compared to ACAM2000® in terms of vaccinia specific neutralizing antibody response at the peak visits (Day 42 for Group 1 and Day 28 for Group 2)

 Endpoint: PRNT GMT at the peak visits

Efficacy

Showing that vaccination with MVA-BN prior to administration of ACAM2000 results in an attenuation of take in terms of Maximum Lesion Area (MLA)

 Endpoint: MLA in mm² after scarification with ACAM2000

Immune Response Data - Neutralizing Antibodies

Lesion Area Attenuation

Connor immunity endpoint met

PRNT GMTs at peak visits were significantly higher for MVA-BN group compared to ACAM2000 group, 153.5 vs. 79.3 (ratio of 1.935; 95% CI: 1.562, 2.397), demonstrating non-inferiority of MVA-BN compared to ACAM2000

PRNT GMTs at Week 2 (after 1 vaccination) were 16.2 in both groups

Conclusion - Smallpox

• Peak visit neutralizing antibodies induced by MVA-BN were two-fold higher compared to ACAM2000.
• Immune responses were shown to be non-inferior after a single dose of MVA-BN vaccination - at a time when ACAM2000 is reported to have induced a protective response.
• The attenuated and an accelerated healing time observed in subjects who received MVA-BN prior to scarification with ACAM2000 shows that MVA-BN is able to suppress the viral replication induced by ACAM2000, providing evidence of the efficacy afforded by MVA-BN to protect against smallpox.
• MVA-BN shows significantly better tolerability compared to ACAM2000. No SAEs related to MVA-BN were reported, and the frequency of Grade 3 or higher related AEs was less for MVA-BN (1.2%) in comparison to ACAM2000 (10.3%) (data not shown).

OVERALL CONCLUSIONS

• Overall survival in pooled NHP challenge studies was 88-100% of MVA-BN-vaccinated animals compared to 6-31% of control animals
• Single dose of MVA-BN provided similar protection from MPX challenge compared to two dose regimen
• MVA-BN was effective to reduce morbidity (e.g. body weight, viral load, lesion counts, respiratory symptoms)

Conclusions - Monkeypox

• Significant reduction in MLA with MVA-BN priming prior to ACAM2000
• (Co-)Primary endpoint of take attenuation met
• Vaccination with MVA-BN® post-exposure to MPX and for MPX prevention in ongoing trials:
  • Healthcare workers in England during the outbreak in 2018 (NCT03745131)
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