PERFORMANCE OF LICENSED MENINGOCOCCAL VACCINES AGAINST HYPERVIRULENT MENC STRAINS: AN INTERESTING POST-hoc ANALYSIS

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BACKGROUND

This post-hoc analysis was triggered by the evidence of an increase in invasive meningococcal disease (IMD) incidence in Tuscany (Italy) in 2015/16 (Figure 1 and 2), with the most common bacterial isolates being hypervirulent strains belonging to meningococcal serogroup C (MenC) clonal complexes cc11 and cc334.

AIM

The goal of this post-hoc analysis was to assess antibody titres against five MenC hypervirulent field strains (FI001 to FI005), Table 1 in sera from children enrolled in previous trials where they were primed with either the quadrivalent meningococcal CRM197-conjugate vaccine (MenACWY-CRM; Menveo, GSK) or the monovalent MenC-CRM197-conjugate vaccine (MenC-CRM; Menjugate, GSK) and who received a MenACWY-CRM booster dose.

METHODS

Figure 3. Sera from a subset of children who participated in 2 clinical studies were selected for this post-hoc analysis.

RESULTS

Table 1. Core analysis of the five MenC hypervirulent field strains isolated from IMD cases showed that four strains (FI001 to FI004) belonged to cc11 and one (FI005) to cc334.

CONCLUSIONS

This post-hoc analysis showed that both MenACWY-CRM and MenC-CRM are able to elicit immune responses and immunological memory against hypervirulent cc11 and cc334 MenC strains responsible for outbreaks of IMD.

Overall, there was a trend to higher antibody titres against FI002, FI003 and FI004 than against FI001 and FI005 hypervirulent field strains.

hSBA GMTs were high after the MenACWY-CRM booster dose in all groups, with a trend to higher responses in children primed with MenC-CRM which was expected considering that MenC-CRM contains twice as much MenC antigen (10 μg) per dose as MenACWY-CRM and is also adjuvanted with aluminium hydroxide.

Irrespective of the strain tested or the identity and number of doses of priming vaccine, hSBA titres ≥4 (not shown) and ≥8 were detected in almost all sera (≥96.7%) following a MenACWY-CRM booster dose.

REFERENCES


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ACKNOWLEDGEMENTS

Medical writing and editorial support were provided by Noëmi Bulki and Paola De Berardis (Modis and GSK).

Figure 1. Annual distribution of MenC IMD cases by outcome between Jan 2000 - Feb 2016 (n=115) in Tuscany (Italy); a substantial increase observed in 2015

Figure 2. Incidence rate (IR) of MenC IMD cases by municipality of symptom onset in Tuscany (Italy) between Jan 2015 - Feb 2016 (n=43)

Figure 3. Sera from a subset of children who participated in 2 clinical studies were selected for this post-hoc analysis.

Figure 4. MenC hypervirulent field strains: post-primary seroresponse rates tended to be higher in the MenC_1dose group than in the MenACWY_1dose group

Figure 5. MenC hypervirulent field strains: hSBA GMTs were highest in the MenACWY_2doses group after primary vaccination and increased in all groups following the booster dose, with a trend to higher following MenC-CRM priming.

Figure 6. Impressive of the MenC hypervirulent field strain tested on the identity and number of doses of priming vaccine, hSBA titres ≥8 were detected in almost all sera tested (≥96.7%) following a MenACWY-CRM booster dose.