0. Beyond B Antigen Coverage: The Potential of the 4CMenB Vaccine for Cross-Protection Against Pathogenic Neisseria Infections

Yara Ruiz Garcia, MSc, PhD; Woo-Yun Sohn, MD; Mariangaza Pizza, Biological Sciences, PhD; Rafik Bekkat-Berkani, M.D.; GSK, Rockville, Maryland; GSK Vaccines, Siena, Toscana, Italy

Session: P-01. Adolescent Vaccines

Background. Two human pathogenic Neisseria species exist: N. meningitidis (Nm) and N. gonorrhoeae (Ng). Although causing disparate clinical syndromes, invasive meningococcal disease (IMD) and gonorrhea, they are genetically similar and share key protein antigens. The 4CMenB vaccine, licensed against meningococcal B disease, comprises 4 antigenic components (factor H binding protein (fHbp), variant 1.1, serologically B, Neisseria heparin binding antigen (NHBA) peptide 2, Neisserial adhesin A (NaDA) variant 3; and Porin A (PorA) PL4), and potentially protects against non-B invasive meningococcal and gonococcal strains. In this review, we summarize the similarities between these antigens and those in Ng serogroups A, C, W, X and Ng.

Methods. Published data in humans were analyzed to conduct a narrative literature review of the potential extent of meningococcal vaccine-induced protection against non-B meningococcal strains and Ng. Techniques applied to indirectly measure this effect are based on genotype-phenotype modelling, strain coverage, bactericidal killing and direct impact on disease reduction.

Results. Data were identified from countries in America, Europe, Africa and Oceania. The genes encoding for fHbp and NHBA are also present in strains belonging to the non-B serogroups, while NADa is present in several strains of serogroups C, W and Y, and PorA PL4 in mainly in serogroup W. At the genome level, Ng and Nm share up to 90% homology. Most of the outer membrane vesicle antigens, like PIQ, Omp85 (BamA), Ngpa, MrFe, MetQ, LbpA, PorB, FeaA, Opca and NHBA, are highly conserved in Ng. In addition, a synergistic effect might enhance immunogenicity against non-B serogroups as shown challenge studies with short B serogroup.

Conclusion. 4CMenB components are present and conserved in several Ng and Nm strains. Recent results demonstrate that 4CMenB reduces MenW disease incidence in infants and might generate cross-protection against other non-B serogroups. In addition, 4CMenB has been shown to be effective in reducing gonococcal infections in adolescents. Research on future genomic and proteomic characterizations of IMD and gonorrhea strains will provide information on the molecular basis of the underlying broad strain coverage, while informing decisions regarding prevention and immunization programs.

Disclosures. Yara Ruiz Garcia, MSc, PhD. GSK group of companies (Employee); Woo-Yun Sohn, MD. GSK group of companies (Employee, Shareholder); Mariangaza Pizza, Biological Sciences, PhD. GSK group of companies (Employee, Shareholder); Rafik Bekkat-Berkani, M.D. GSK group of companies (Employee, Shareholder)

03. Immunogenicity and Safety of a Quadrivalent Meningococcal Conjugate Vaccine (MenACYW-TT) Administered as a Booster Dose in Adults and Adolescents Vaccinated Against Meningococcal Disease 3-6 Years Earlier

James Peterson, MD; Carmen Deseda, MD; Katie Julien, MD; Betzana Zambrano, MD; German Alfén, MD; Sue Jayuan, MSc; Judy Pan, PhD; Habib Arroum, MD; Kuck Y Varghese, MD

Session: P-01. Adolescent Vaccines

Background. Booster doses of meningococcal conjugate vaccines may induce long-term protection against invasive meningococcal disease. MenACYW-TT [MenQuad] is a quadrivalent meningococcal conjugate vaccine, licensed for use in ages 2 years and older in USA. The vaccine is also licensed in ages 12 months and older in EU and certain other countries. We evaluated the safety and immunogenicity of MenACYW-TT versus MenACWY-DT in 360 participants (ratio 1:1) between ages 2 and 55 years in Japan. Serum bactericidal assays with human complement (hSBA) were used to measure antibodies against vaccine serogroups at baseline (Day 0) and 30 days post-vaccination (D30). Safety data were collected up to 30 days post-vaccination.

Results. Non-inferiority of immune responses for all four serogroups, based on percentages of participants achieving hSBA vaccine seroresponse as primary endpoint, was demonstrated for MenACYW-TT compared to MenACWY-DT at Day 30 in comparison to baseline: 85.6% vs 65.4% for serogroup A, 96.6% vs 62.6% for serogroup C, 87.4% vs 49.2% for serogroup W, and 97.7% vs 63.5% for serogroup Y. The proportions of participants with hSBA GMTs ≥1:8 following MenACYW-TT administration were higher than those after MenACWY-DT administration for serogroups C (98.9% vs 81.0%), W (99.4% vs 91.1%) and Y (100 % vs 89.4%) and comparable for serogroup A (96.6% vs 92.7%). The hSBA GMTs were higher following administration of MenACYW-TT for all four serogroups. Immunogenicity results in participants 10 to 17 years of age and ≥18 years of age were comparable to those in the whole population (2.5% of participants). The safety profiles of MenACYW-TT and MenACWY-DT were comparable. There were no immediate adverse events (AEs), no AEs leading to study discontinuation, and no vaccine-related serious adverse events reported in the study.

Conclusion. MenACYW-TT was well tolerated and demonstrated a non-inferior immune response compared to that for the licensed MenACWY-DT vaccine when administered as a single dose to meningococcal vaccine-naive children, adolescents, and adults in Japan.

Disclosures. Osamu Matsumo, MD, Sanofi Pasteur (Scientific Research Investigator, Research Grant or Support); Muneg Ujiie, MD, Sanofi Pasteur (Scientific Research Investigator, Research Grant or Support); Hitoshi Kikuchi, MD, Sanofi Pasteur (Scientific Research Investigator, Research Grant or Support)

04. Immunogenicity and Safety of a Quadrivalent Meningococcal Conjugate Vaccine (MenACYW-TT) Administered in Meningococcal Vaccine-Naive Participants Across a Broad Age Range (2-55 Years) in Japan

Osamu Matsumo, MD; Muneo Ujiie, MD; Hitoshi Kikuchi, MD; Danaya Chansinghakul, MD; Takahiro Inoue, MSc; Kuck Varghese, PhD; Nuchra Sirisupphimt, MSc; Tomoyuki Hashiguchi, MSc; Betzana Zambrano, MD; Takahiro Nakama, MD; Carina Frago, MD; Emilia Jordanov, MD; Mandep S. Dhingra, MD; ToCROM Clinic, Tokyo, Japan; Center Hosp. of the Nat’l Ctr. for Global Health & Medicine, Tokyo, Tokyo, Japan; ‘Meitetsu Hospital, Aichi, Aichi, Japan; ’Sanofi Pasteur, Bangkok, Nonthaburi, Thailand; ”Sanofi K.K., Tokyo, Tokyo, Japan

Session: P-01. Adolescent Vaccines

Background. MenACYW-TT [MenQuad] is a quadrivalent meningococcal conjugate vaccine, licensed for use in ages 2 years and older in USA. The vaccine is also licensed in ages 12 months and older in EU and certain other countries. We evaluated the persistence of immunity 3-6 years later. MenACYW-TT elicits robust booster responses in adults and adolescents primed with MenACYW-TT or MCV4-CRM.

Disclosures. Betzana Zambrano, MD, Sanofi Pasteur (Employee) German Áñez, MD, Sanofi Pasteur (Other Financial or Material Support, Former employee) Sue Jayuan, MSc, Sanofi Pasteur (Independent Contractor) Judy Pan, PhD, Sanofi Pasteur (Employee) Habiba Arroum, MD, Sanofi Pasteur (Employee) Kuck Varghese, PhD, Sanofi Pasteur (Employee) Emilia Jordanov, MD, Sanofi Pasteur (Employee, Shareholder) Mandep S. Dhingra, MD, Sanofi Pasteur (Employee, Shareholder)

Session: P-01. Adolescent Vaccines

Abstracts • OFID 2021;8 (Suppl 1) • S125

Downloaded from academic.oup.com/ofid/ at guest on 09 December 2021