CHARACTERISATION OF 4CMenB VACCINE-INDUCED ANTIBODIES TO *NEISSERIA GONORRHOEAE*

Authors:
Semchenko EA[1*], Eskandari S[1*], Taha[1], Slesarenko V[1], O'Sullivan M[2], Thng C[2], Seib KL[1]

[1] Institute for Glycomics, Griffith University, Southport, Qld 4215, Australia
[2] Gold Coast Sexual Health Service, Southport, Qld 4215, Australia *Co-first authors

Background:
The sexually transmitted infection gonorrhoea is a global public health concern due to its high prevalence, the severe sequelae that can result from infection, and the increasing difficulty in treating infections caused by multi-drug resistant strains of *N. gonorrhoeae* (Ng). The lack of natural immunity and appropriate animal model have made vaccine development for Ng challenging.

Despite causing distinct diseases, *N. gonorrhoeae* and *Neisseria meningitidis* are closely related human pathogens, with 80–100% DNA homology and conservation of the majority of genes. Observational and epidemiological studies have shown that people vaccinated with *N. meningitidis* serogroup B vaccines (MeNZB or 4CMenB) have a reduced rate of Ng infection compared to unvaccinated controls. We are now conducting a randomised control trial with a 4CMenB to determine if it provides protection against Ng. Here we investigate serum samples from 4CMenB-vaccinated participants to characterise vaccine-induced antibodies that are cross reactive with Ng.

Methods:
ELISA and Western Blot assays were used to test serum samples from 20 vaccinated and 20 unvaccinated participants, to characterise IgG1, 2, 3, 4, IgA and IgM antibodies that cross react with Ng whole cells and Ng proteins.

Results:
There is a significant increase in IgG, IgG1, IgG4 and IgA antibodies against Ng in sera from 4CMenB-vaccinated participants compared to unvaccinated participant. The levels of IgM and IgG2 and IgG3 were similar between both groups. Sera from 4CMenB-vaccinated was also able to kill Ng via complement-mediated serum bactericidal activity.

Conclusion:
Vaccination with 4CMenB induces antibodies that are cross reactive with Ng and are able to kill the bacteria. Studies are ongoing to determine if 4CMenB protects against Ng infection.

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