(1) Submission ID#1524600

Gonococcal (GC) Genital Infection induces Serum LOS nLc4 α Chain Immunoglobulins

Author(s)

Stephanie E. McLaughlin, MD, MPH

Acting Instructor, Attending Physician

University of Washington

Zhijie Yang, PhD

Project Manager

Atila Biosystems

J. McLeod Griffiss, MD

Professor

UCSF, SF VA Medical Center

Background

Neisserial lipooligosaccharides (LOS) present multiple antigens. This has made it difficult to determine which antigens may induce potentially protective antibodies.

Aim/Methods

We developed a multiplex assay to quantify human IgG specific for different LOS α chain antigens. We constructed affinity columns with use of gonococcal 1291 mutant LOSs that expressed nLc4 (1291WT), nLc3 (1291a) and Lc2 (1291c) LOS α chains (Chen, et al., 2011). We subsequently purified IgG specific for each α chain from commercial IVIG by successive binding and elution, quantified IgG in each eluate, and used the eluates as standards for determining LOS IgG concentrations in serum from 38 cisgender individuals (henceforth, GC-contacts) exposed to a partner with gonococcal infection (cohort described by McLaughlin, et al., 2019). The multiplex assay for GC-contact serum LOS IgG quantification used Luminex® beads (Bio-Rad) conjugated with the same 1291 mutant LOSs. The quantity of IgG that bound WT nLc4 LOS in each serum was considered the total LOS IgG in the serum. To quantify nLc4 IgG, that that bound nLc3 LOS was subtracted from that that bound WT nLc4 LOS. To quantify nLc3 IgG, that that bound Lc2 LOS was subtracted from that that bound nLc3 LOS. We compared LOS IgG concentrations in sera of infected GC-contacts who reported >7 days after exposure with that in sera of those who reported within seven days.

Results

Twenty-four contacts were infected. The quantity of nLc4, nLc3 and lc2 IgG summed to the quantity that bound the WT LOS, which showed the accuracy of the assay. Eight infected NG-contacts were seen >7 days after exposure, and 16 NG-contacts were seen within 7 days of exposure. Participants who went untreated for a week or longer had significantly higher nLc4 α chain LOS IgG than those who presented sooner (t-test, p=0.04).

Conclusions

IgG specific for the LOS nLc4 α chain is induced during genital gonococcal infection. The sample sizes were

not sufficient to stratify this analysis by gender of contacts, nor was it large enough to determine which LOS IgG may be protective.

Uploaded File(s)

Supplemental Document Upload

Table 1. Pooled Concentrations of Infected GC-Contact LOS α Chain IgGs

USVGLHTT-1524600-1-ANY.docx