

SEROGROUP Y MENINGOCOCCI (Y:14:P1.2,5) ARE RAPIDELY KILLED IN AN EX VIVO WHOLE BLOOD MODEL OF INFECTION WHEREAS SEROGROUP B MENINGOCOCCI (B:4:P1.7,16) SURVIVE AND GROW TO LOGARITHMIC PHASE.

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OBJECTIVE: To compare the survival and pathogenicity of an invasive and a carrier strain of *Neisseria meningitidis* in an *ex vivo* whole blood model of infection.

DESIGN: Two strains of *N. meningitidis* (Y:14:P1.2,5 —carrier strain— and B:4:P1.7,16 —invasive strain—) were inoculated at low *cfu* (9009 +/-658 and 9863 +/- 1580 per mL, respectively) in heparinized whole blood samples of healthy vaccinated (tetraivalent polysaccharide vaccine) and non vaccinated donors. Remaining viable meningococci were determined at intervals up to 24 h after onset of experiments. In addition, leukocyte cell populations were studied using flow cytometry. Cytokine release was measured using ELISA.

RESULTS: Serogroup Y meningococci were killed within 20 to 30 min after inoculation in whole blood independently of the status of the blood donor (e.g. vaccinated or not). Also independently of the donor, serogroup B meningococci reached logarithmic growth phase in whole blood samples usually within 4 hours after setup of the experiment. Accordingly, high amounts of cytokines (namely IL-1 β , IL-6, IL-10 and TNF α , but usually not INF γ) were found to be released after incubation with serogroup B meningococci whereas only comparatively low amounts of IL-6 were released after incubation with serogroup Y meningococci. After incubation with serogroup B meningococci a considerable loss of neutrophils was observed. Neutrophils remained unchanged after incubation with serogroup Y meningococci.

CONCLUSIONS: The *ex vivo* whole blood model with low *cfu* seems to be highly useful to reflect the host-pathogen interactions as taking place *in vivo*. Results obtained using B meningococci indicate a pathogen mediated killing of neutrophils. However, host response to meningococci seems to be strain specific.