

EV0205

ePoster Viewing

Community-acquired respiratory infections

Novel mucosal sampling methods are well tolerated and useful for microbiological and immunological research

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Background: The nasal mucosa is a key site of host-pathogen interaction. Participants in our Experimental Human Pneumococcal Carriage (EHPC) studies provide samples with which we can investigate immunological protection and microbiological changes in the context of bacterial invasion. We investigated the discomfort and symptom burden of three sampling methods: nasal wash; nasal curettage; nasosorption.

Material/methods: Healthy volunteers underwent nasal inoculation with *Streptococcus pneumoniae* serotype 6B. All volunteers had nasal washes to monitor for pneumococcal carriage. A selection of participants also underwent nasal curettage (cell collection), and nasosorption (concentrated nasal fluid collected with a filter paper). After each procedure, symptoms were assessed using a 5-point modified Likert scale. Participants completed a daily symptoms log for 7 days after inoculation. Symptoms for each procedure were compared within individuals (Friedman test). We also compared symptoms from a group which underwent inoculation with *Streptococcus pneumoniae*, with a group who had additional sampling by nasal curettage and nasosorption (using area under the symptom-time curve).

Results: Twenty participants rated symptoms associated with nasal curettage and nasal wash (n=88), and nasosorption (n=60). For nasal curettage, nasosorption and nasal wash, the proportion of responses that reported any degree of pain were 73%, 10% and 5%, respectively. For nasal curettage, nasosorption and nasal wash, the proportion of responses that reported any degree of discomfort were 86%, 47% and 57%, respectively. For nasal curettage, nasosorption and nasal wash, the proportion of responses that reported any degree of lacrimation were, 84%, 28% and 28%, respectively. For nasosorption and nasal wash the maximum rating was 'moderately' uncomfortable, painful or causing lacrimation. Some responses rated nasal curettage as more than 'moderately' painful (2%), uncomfortable (8%) or causing lacrimation (6%). Compared to both nasosorption and nasal wash, nasal curettage caused more pain ($p < 0.001$, $p < 0.001$), more discomfort ($p < 0.001$, $p < 0.05$) and more lacrimation ($p < 0.001$, $p < 0.001$), respectively. Volunteers found nasal wash to be significantly less uncomfortable on Day 14 compared to baseline ($p < 0.05$). Daily symptom logs for nasal and general symptoms were completed by 49 volunteers, 20 of which had nasal curettage and nasosorption. Additional nasal

sampling did not result in a significant difference in symptoms. There was no variation in nasal or general symptoms between different time-points in either group.

Conclusions: All nasal sampling techniques were well tolerated. Nasal cell collection causes more symptoms than nasal wash and nasosorption. For participants undergoing nasopharyngeal inoculation, nasal sampling is not associated with significant additional symptoms. These mucosal sampling methods can be used with confidence in future studies allowing us to longitudinally measure nasal mucosal cell populations, levels of cytokines, antibodies and, samples can also be used for microbiome analysis.