ASSOCIATION BETWEEN RESPIRATORY VIRAL INFECTIONS AND MENINGOCOCCAL CARRIAGE IN BRISTOL SCHOOL STUDENTS IN 2014 - 2015

INTRODUCTION

N. meningitidis causes meningococcal disease mostly in young children, yet the bacteria are most commonly found as commensal organisms in the throats of adolescents and young adults. If transmission of the meningococcal bacteria can be prevented, the incidence of disease could be reduced. The Meningococcal Group C vaccination programme for example led to a reduction in carriage and transmission of Men C bacteria in adolescents and young adults, which has led to the protection of others, a phenomenon sometimes termed herd or population protection (1). Several studies have shown associations between influenza A and invasive meningococcal disease (IMD)(2,3), but previous studies have not directly investigated the relationship between influenza or other respiratory viral infections and meningococcal carriage as our current work aims to do.

STUDY DESIGN AND METHODS

• 5,456 pharyngeal swabs were collected from Bristol school students aged 15–19yrs, between September 2014 and May 2015, into 1.5ml skim milk-tryptone-glucose-cysteine (STGG) broth as part of a longitudinal study.
• 1,813 students were recruited for an initial swab, with 918 taking part in a longitudinal part of the study in which pharyngeal swabs were collected from them each month for 6 months.
• Bacterial and viral nucleic acids were extracted from the STGG broth using a QIAsymphony machine.
• Quantitative real-time polymerase chain reaction (qPCR) was used to identify the presence of N. meningitidis by identifying the sodA gene (Ct<26) within a month of a pharyngeal swabs being received.
• In the initial phase of analysis of swab samples for viruses we have processed the first 230 pharyngeal samples per visit (total 1,380) using reverse transcriptase (rt)-PCR methods for the presence of a panel of viruses.

RESULTS

Results 1 – N. meningitidis and viral detection rates in the pharyngeal swabs at each visit time point.

Each ‘X’ represents the percentage detection rate of N. meningitidis in pharyngeal swabs at a visit time point, and each bar represents the percentage detection of a virus at each visit time point. Results only shown where the detection rate of a virus was at least 1% per visit. n=1,380.

Results 2 – Association in the same sample between the presence of N. meningitidis and A) the percentage of virus positive or negative samples and B) the percentage of Rhinovirus positive or negative samples that had the presence or absence of N. meningitidis. No other individual viruses showed a statistically significant association with N. meningitidis. Chi Square test was used to generate p values. n=1,380.

REFERENCES


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