EVALUATION OF THROAT-SWAB TYPE AND MOLECULAR DIAGNOSTICS FOR VIRAL AETIOLOGIES OF ACUTE PHARYNGITIS

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ABSTRACT (MODIFIED)

Background & Objectives: While throat swabs are often used to diagnose ‘sore throat’, most cases are of viral aetiology. Our objectives were to (i) characterize the viral causes associated with molecular diagnostics; (ii) compare a prototype flocked throat swab with a conventional rayon throat swab for viral aetiology detection; and (iii) determine whether throat swabs provide an incremental benefit—when used in conjunction with a flocked mid-turbinate nasal swab—for viral diagnostics.

Methods: From autumn through winter (2011–2013), we recruited subjects participating in McMaster University’s campus health clinic who (a) reported a sore throat, (b) presented within three days of symptom onset, (c) did not have recent antibiotic prescription, (d) did not have recent antibiotic prescription, (e) were aged 10–60 years old. A trained study coordinator sampled the oropharynx and tonsils in randomized order with a prototype flocked throat swab and a conventional rayon throat swab; this was followed by nasal sampling with a flocked midturbinate nasal swab (Soplo, Belgium, Italy). Swabs were then placed in universal transport medium. In the laboratory, samples were processed following published protocols for each of the diagnostic methods used, including: (i) multiplex RT-PCR for influenza A/B, metapneumovirus, parainfluenza viruses 1–3, adenovirus, rhinovirus, coronaviruses 229E/OC43/NL63/UC1, enteroviruses/astrovirus, and coxsackieviruses; (ii) EIA for streptococcal A antigen; (iii) Culture and detection of mycoplasma and legionella species; (iv) culture and detection of rhinovirus and coronavirus, where latter was detected only by rayon throat swab.

Results: Eighty-three subjects participated, of whom 60 (72%) had an infectious cause of acute pharyngitis. Eight (7%) of 83 university students with acute pharyngitis had an infectious cause of acute pharyngitis.

Conclusions: Our study showed, for the first time, an incremental benefit of using a rayon throat swab in conjunction with a flocked nasal swab to detect viral causes of acute pharyngitis, which would have applications for surveillance of respiratory viruses.

METHODS

Study recruitment

- Study approved by the St. Joseph’s Hospital Research Ethics Board
- Participants recruited if (a) aged 10–60 years old, (b) reported a sore throat (within 3 days), (c) did not have recent antibiotic prescription, and (d) did not have a serious throat illness (determined by care provider).

Swab collection

- Subjects left oropharynx and tonsils sampled with prototype flocked and conventional rayon throat swabs; in randomized order
- Nasal samples subsequently sampled with flocked midturbinate nasal swab

RESULTS

- No salient differences between aetiologies at presentation or follow-up
- Flocked better at detecting viruses

CONCLUSIONS

- Incremental benefit of using a rayon throat swab in conjunction with a flocked nasal swab for viral diagnosis
- Potential for application in respiratory viral surveillance