Short Report: Can mouth swabs replace throat swabs?

Cross-sectional survey of the effectiveness of rapid streptococcal swabs of the buccal mucosa

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Streptococcal sore throat—group A β–hemolytic streptococcal pharyngitis—accounts for 5% to 24% of patients complaining of sore throats, a frequent presentation in primary care.[1] Several strategies for assessment of sore throat exist, including examination by a physician,[1,2] sore throat scores,[3,4] rapid antigen detection tests (RADTs),[5,6] criterion standard culture and sensitivity swabs, and various combinations of the above.[7]

One of the difficulties with throat swabs of any type is that they often trigger patients' gag reflexes and are therefore difficult to perform in children. I wondered if results of swabs of the buccal mucosa would correlate well with results of pharyngeal swabs.

No such study had ever been done. Since RADTs were used regularly in the family medicine clinic where the study was conducted, they were chosen for testing, even though they were designed for pharyngeal use.

Most rapid antigen detection assays use enzyme immunoassays and generally have a sensitivity of 80% to 90%, with a specificity of 70% to 80%.[7] This limited specificity leads most authors and many clinicians to "cover" a negative RADT result with a traditional criterion standard culture and sensitivity swab to eliminate false negatives.[7]

The study was undertaken in Sioux Lookout, a town of 7000 in northwest Ontario, with a catchment area of 27 000. The study was conducted in the Hugh Allen Clinic.

Sixty-four consecutive pharyngitis patients attending the clinic in the winter of 2005 had 2 swabs done. One swab was of the pharynx and the other was of the buccal mucosa. Patients were included in the study if their primary complaint was sore throat. Two clinic physicians participated; no patients declined.

The SureStep Strep A (II) Test by Applied Biotech was used according to the manufacturer's instructions, with the exception that 1 of the 2 swabs was taken of the buccal mucosa. This was done by applying the second swab to the right buccal mucosa alongside the lower dentition. Both swabs were processed for 5 minutes, according to the manufacturer's instructions. The swabs were taken by clinic physicians and processed by nurses with several years' experience with the SureStep test. Written informed consent was obtained for each participant. The power of the study was designed to note if the buccal swabs would be at least 80% as effective as the throat swabs ($\alpha = .05$ and $\beta = .2$). The results were tabulated and the sensitivity and specificity calculated using the on-line statistics calculator from the Centre for Evidence-Based Medicine (**www.cebm.net**). Ethics approval was granted by the Lakehead University Research Ethics Board.

The 64 participants included 30 male patients and 34 female patients between the ages of 1 and 79. The average age was 31.1 years. The prevalence of RADT throat swabs positive for streptococci was 12.5%. No buccal swabs were positive (sensitivity of only 5.6%).

The most effective management of a sore throat would identify and treat only those patients with proven streptococcal pharyngitis. Even among these patients, a 2006 Cochrane Review notes a "relative benefit" of treatment to lessen suppurative (abscess) and non-suppurative

EDITOR'S KEY POINTS

- Throat swabs often trigger patients' gag reflexes and are difficult to perform in children. The author wondered if results of swabs of the buccal mucosa would correlate well with results of pharyngeal swabs.
- Swabbing the buccal mucosa using a rapid antigen detection test was found to be ineffective.

POINTS DE REPÈRE DU RÉDACTEUR

- Le frottis pharyngé déclenche souvent un réflexe nauséeux et est difficile à effectuer chez l'enfant. Les auteurs voulaient savoir si les résultats des frottis buccaux concordent avec ceux des frottis pharyngés.
- Les frottis de la muqueuse buccale utilisant un test rapide de détection d'antigènes se sont montrés inefficaces.

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(glomerulonephritis and rheumatic fever) complications.[8] Despite an annual incidence of only 1 per million population,[1] we saw 2 patients with rheumatic heart disease last year in our emergency department, which serves a largely aboriginal population of 27 000. The prevalence of streptococcal infection in our study was 12.5%, which is at the low end of rates seen in similar studies. Our study was limited by the use of a convenience sample of 64 consecutive patients at one point in the year. It was thought this would be sufficient to identify any usefulness of this unique application of RADTs for streptococcal sore throat.

Of the many potential simplifications of screening for and diagnosing streptococcal pharyngitis, swabbing the buccal mucosa using RADTs was found to be ineffective.

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Competing interests

None declared

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