



## Case report

# A positive rapid strep test in a young adult with acute pharyngitis: Be careful what you wish for!

Burke A. Cunha<sup>a,b,\*</sup><sup>a</sup> Infectious Disease Division, Winthrop-University Hospital, Mineola, New York, United States<sup>b</sup> State University of New York, School of Medicine, Stony Brook, New York, United States

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## ABSTRACT

In young adults with acute pharyngitis, the main differential diagnosis is between GAS pharyngitis, EBV infectious mononucleosis, or other causes of viral pharyngitis. A positive RST does not differentiate GAS colonization from infection as is well illustrated by this case. Laboratory test results must be interpreted in the appropriate clinical context to be diagnostically meaningful. The RST only detects group A streptococci, but does not, of itself, implicate a causative role in the patient's pharyngitis. Without clinical correlation based on the clinical findings of GAS pharyngitis a positive RST may mislead the unwary physician to unnecessarily treat colonization rather than infection.

I report an interesting case of a young adult who presented to the ED with no fever and acute pharyngitis. His RST was positive, and he was treated with procaine penicillin and released. Three days later he was re-admitted to the hospital with severe Herpes gingivostomatitis.

## Introduction

Clinical correlation of findings remains the basis of clinical diagnosis. Clinical diagnosis is often verified by laboratory tests [1–5]. In adults presenting with acute pharyngitis, the use of rapid strep tests (RST) for Group A streptococci (GAS) is commonly used to confirm the diagnosis of GAS pharyngitis in young adults (<30 years). GAS colonization is common in those > 30 years of age, but *bona fide* GAS pharyngitis is rare in adults > 30 [3–5]. Specimen sampling problems aside, in the proper clinical setting, a negative RST effectively rules out GAS pharyngitis. Without the associated clinical findings of GAS pharyngitis, a positive RST is not diagnostic of pharyngitis. Detection of GAS verifies the presence, but not the role, of GAS in pharyngitis [6–8].

Detection of a microorganism, regardless of the sensitivity/specificity of the test, does not implicate the organism's causal role in the infection at the site tested. Young adults with acute pharyngitis still need a clinical evaluation to differentiate GAS pharyngitis from as other causes of acute pharyngitis [9,10]. The real life clinical problem is that a positive RST does not differentiate colonization from infection [2–4]. Without clinical correlation, organism detection alone is often misleading, i.e., may represent colonization and not infection. This is not due to false positive RSTs, but rather that a positive RST only detects GAS, but does not differentiate colonization from infection that is the clinical problem [2,6,7].

The rationale of GAS pharyngitis is to prevent the subsequent acute rheumatic fever (ARF). There is a 10 day “treatment window” that provides enough time to treat GAS pharyngitis. Therefore, there is no time critical need for a “rapid diagnosis” with GAS pharyngitis to prevent ARF. Although RSTs have a place in practice to facilitate patient flow, the diagnosis of GAS pharyngitis should be based on both clinical and microbiologic findings [3,5] (Table 1). Basing the diagnosis on a positive RST alone, results in needlessly treating GAS pharyngeal colonization [8–10]. A recent case well illustrates the perils of rapid test results without assessing their diagnostic significance in the appropriate clinical context.

## Case report

A 20 year old college student in good health presented to the Emergency Department (ED) complaining of three days of sore throat and mild malaise. He was afebrile and his physical examination was unremarkable for GAS pharyngitis, i.e., he had no fever, no palatal petechiae, no uvular edema, no tonsillar exudates, and no bilateral anterior cervical adenopathy. The WBC count was 8.4 k/mm<sup>3</sup> with relative lymphopenia (6% lymphocytes), with a normal platelet count. His ESR was normal. Serum transaminases were normal. He was treated with IM procaine penicillin and released. Three days later he returned to the hospital with severe Herpes gingivostomatitis (a clinical

\* Corresponding author at: Infectious Disease Division, Winthrop-University Hospital, 222 Station Plaza North (Suite #432), Mineola, New York, NY 11501, United States.  
 E-mail address: [bacunha@winthrop.org](mailto:bacunha@winthrop.org).

**Table 1**  
Clinical Diagnostic Features of EBV Infectious Mononucleosis vs. Group A Streptococcal Pharyngitis vs. Herpes Gingivostomatitis

	EBV Infectious Mononucleosis	Group A Streptococcal Pharyngitis	Herpes Gingivostomatitis
<b>Symptoms:</b>			
Fatigue	+	-	-
<b>Signs:</b>			
Fever/sore throat	+	+	-
Exudative/non-exudative pharyngitis	+	+	-
Palatal petechiae	±	±	-
Uvular edema	-	+	-
Bleeding gums	-	-	+
Oral necrotic ulcers	-	-	+
<b>Cervical adenopathy</b>			
Bilateral anterior cervical	±	+	-
Bilateral posterior cervical	±	-	-
Bilateral upper lid edema (Hoagland's sign)	+ <sup>a</sup>	-	-
Splenomegaly	+ <sup>b</sup>	-	-
Truncal maculopapular rash	+ <sup>a</sup>	-	-
<b>Laboratory Tests:</b>			
WBC count	N/↓	N/↓	N/↓
Lymphocytosis	+ <sup>a</sup>	-	-
Relative lymphopenia	-	-	+
Atypical lymphocytes	+ <sup>b</sup>	-	-
Mild/transiently ↑AST/ALT	+ <sup>a</sup>	-	-
↑ ESR	+ <sup>a</sup>	-	-
Throat Gram stain for abundant PMNs (not organisms)	-	+	+
RST/GAS throat culture	± <sup>c</sup>	+	± <sup>c</sup>
Monospot test	+ <sup>b</sup>	-	-
↑ EBV VCA IgM titers	+ <sup>b</sup>	-	-
↑ HSV-1 IgM titers	-	-	±

ESR = Erythrocyte sedimentation rate.

GAS = Group A streptococci.

AST = Aspartate aminotransferase.

Alt = Alanine aminotransferase.

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<sup>a</sup> Early findings.

<sup>b</sup> Late findings.

<sup>c</sup> Colonization common.

syndromic diagnosis). Herpes gingivostomatitis is characterized by no fever, bleeding gums, with multiple anterior oral ulcers with multiple hemorrhagic necrosis and no cervical adenopathy.

## Discussion

Although there were no clinical findings to suggest GAS pharyngitis, a rapid strep test (RST) was performed and was positive. The RST detects GAS, but does not differentiate GAS colonization from infection. Clinically, that the RST may have represented GAS colonization rather than infection was not given consideration. As with other viral etiologies of pharyngitis, e.g., Epstein-Barr virus (EBV) infectious mononucleosis (IM), GAS colonization is not uncommon. In EBV IM up to 30% of patients are colonized by GAS. This vignette illustrates the perils of undue reliance on the RST which may be misleading (represent colonization) without considering the clinical context. The diagnosis of Herpes gingivostomatitis is based on the characteristic findings noted above. No other viruses present in this manner, e.g., adenovirus, Coxsackie virus. Be careful what you wish for has particular relevance here since most physicians confronted with a young adult and pharyngitis wish it's a strep throat and wish to diagnose it rapidly with the RST.

In summary, in young adults, characteristic findings on physical examination best differentiates viral from GAS pharyngitis. A negative RST effectively eliminates the diagnosis, but a positive RST may be misleading indicating only colonization and should be interpreted in the clinical context to avoid an incorrect diagnosis and/or

inappropriate therapy.

## Conflict of interest

No conflict of interest in publication of this manuscript.

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