Suspected Diphtheria in an Uzbek National: Isolation of \textit{Corynebacterium pseudodiphtheriticum} Resulted in a False-Positive Presumptive Diagnosis

\textit{Corynebacterium diphtheriae} infection is still epidemic in the states of the former Soviet Union. To date, no cases have been exported to the United States [1].

An Uzbek national developed severe pharyngitis shortly after entering the United States. Recovery of \textit{Corynebacterium pseudodiphtheriticum} complicated the diagnostic process. The ubiquity of this organism should be more widely recognized.

Three days after arriving in the United States from his native Uzbekistan, a 32-year-old airline crew member was admitted to the hospital with a progressively severe sore throat and dysphagia of 2 days’ duration. He noted that he had received “all” immunizations as a child but did not recall any specific details. He was unaware of recent illness in his family, the airline crew, or close contacts. His temperature was 102°F. His tonsils were enlarged bilaterally, and a grayish-white exudate extended from the tonsil to the posterior pharyngeal wall (figure 1). The uvula and soft palate were erythematous and edematous, and there was tender cervical lymphadenopathy. The leukocyte count was 22,000/μL. Duplicate rapid screening tests for group A streptococci were negative. Epstein-Barr virus IgM viral capsid antigen titers were <1:10.

The patient’s history and the findings raised the possibility of imported diphtheria. After consultation with the local health department and Centers for Disease Control and Prevention, 40,000 units of equine diphtheria antitoxin was administered intravenously. Treatment with intravenous penicillin G (600,000 units every 12 hours) was given and changed to that with oral erythromycin after the patient’s clinical condition rapidly improved within 24 hours.

Cultures of the pharyngeal exudate yielded only a mixture of normal flora. Cultures of nasopharyngeal secretions yielded a heavy, pure growth of pale grayish-white colonies on blood agar and black colonies with a gray halo on Tindall’s agar. A gram stain showed gram-positive club-shaped bacilli forming “Chinese letters,” which were consistent with \textit{C. diphtheriae}. On biochemical testing, however, the organism was identified as \textit{C. pseudodiphtheriticum}.

Infection control measures included immediate respiratory isolation of the patient and identification of his contacts. Four contacts were given erythromycin until final culture results were available.

\textit{C. pseudodiphtheriticum}, previously known as \textit{C. hofmannii}, is a common commensal in the nasopharynx and grows well on most media; the colonial morphology on tellurite agar is very similar to that of \textit{C. diphtheriae} [2]. \textit{C. pseudodiphtheriticum} is a rare and generally opportunistic pathogen that may cause endocarditis [3], tracheitis [4], pulmonary infections [5, 6], and urinary tract [7] infections. No report of pharyngitis due to \textit{C. pseudodiphtheriticum} was found in a review of the literature. In the case reported herein, isolation of the organism from the nasopharynx, but not the pharynx, makes it unlikely that it was the cause of the patient’s illness.

The isolation of \textit{C. pseudodiphtheriticum} and its resemblance to \textit{C. diphtheriae} resulted in a temporary reinforcement of the clinical diagnosis of diphtheria. The delay in ruling out the latter diagnosis prolonged the unnecessary use of chemoprophylaxis in hospital staff and also prolonged unnecessarily the tracing of the patient’s community contacts and their assessment by public health authorities.

\begin{figure}
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\includegraphics[width=0.5\textwidth]{figure1.png}
\caption{Throat of a patient with suspected \textit{Corynebacterium diphtheriae} infection; a grayish-white exudate extends from the tonsil to the posterior pharyngeal wall. The mucosa of the soft palate, uvula, and posterior pharynx was edematous and dusky red.
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\end{figure}

\textbf{References}


\textbf{Clinical Infectious Diseases} 1996;22:735
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1058-4836/96/2202-0083 $02.00