Multiforme Eruption Associated with an *Arcanobacterium haemolyticum* Infection

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**CASE REPORT**

A previously healthy 19-year-old male presented with a pruritic, erythematous eruption on his left thigh. One day earlier, a severe sore throat had developed. Physical examination revealed a generalized, confluent, maculopapular exanthem extending to his distal extremities and neck. He had crops of vesicles appearing over a broad confluent area of erythema on the bilateral shoulders (Figure 1).

![Figure 1. Crops of vesicles with erythematous bases along bilateral shoulders.](image)

In addition, focal areas of erythema multiforme-like, annular lesions were present on the distal legs (Figure 2).

The patient’s voice was muffled, and his tonsils were erythematous and exudative. Marked anterior cervical lymphadenopathy was present, and he was febrile with a temperature of 37.9 °C. The white blood cell count was 19.11 x 10^9/L with a left shift, and the C-reactive protein was 15.1 mg/dL. The streptococcal antigen detection test and Epstein-Barr virus antibodies were negative. A computed tomography scan of the neck demonstrated tonsillar enlargement without evidence of epiglottitis or a retropharyngeal abscess. The throat-swab culture plated on sheep blood agar was negative.

The negative rapid streptococcal and Monospot tests, in the presence of a widespread rash with atypical target lesions, suggested the possibility of erythema multiforme minor or evolving erythema multiforme major. A punch biopsy evaluated immediately with frozen sections revealed acute spongiosic dermatitis with focal subcorneal neutrophilic microabscesses, but no dyskeratosis or epidermal necrosis typical of erythema multiforme. Antibodies to Herpes Simplex virus, HIV, and *Mycoplasma* were negative. A repeat throat-swab culture on sheep blood agar grew *A. haemolyticum* at 48 hours. Treatment with azithromycin led to complete resolution of the pharyngitis and skin exanthem in five days, followed by generalized desquamation.

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**DISCUSSION**

Arcanobacterium haemolyticum is a rare cause of severe pharyngitis that presents with an exan-
them in half of infected patients. The maximum incidence of infection is reported as 2.5% for the
15 to 18-year-old-age group. The differential diagnosis of an adolescent presenting with pharyngitis and exanthem should also include Streptococcus pyogenes, Mycoplasma pneu-
monia and Epstein-Barr virus infections. Obtaining antibodies to Mycoplasma pneumonia and Ep-
stein-Barr virus infections helps to rule out such infections. Clinically, the pharyngitis associated
with both group A streptococci and A. haemolyticum is indistinguishable. A. haemolyticum infection has the highest inci-
dence in the second decade of life, while group A streptococci infection has the highest inci-
dence during the first decade of life. The negative rapid group A streptococcal antigen test
suggests the possibility of an A. haemolyticum pharyngitis; however, a culture is often neces-
sary to distinguish the two.

Many factors make the isolation and culture of A. haemolyticum difficult and thus its incidence
is likely underreported. While the organism is best cultured on human blood agar plates with
the addition of 5% carbon dioxide, most clinical laboratories routinely culture pharyngeal speci-
mens on sheep blood agar. Beta-hemolytic streptococci cultured on sheep blood agar hemolyze within 24 hours, while A. haemolyticum hemolyze slowly, within 48-72 hours. Routine clinical microbiology protocol requires throat cultures to be held for at least 48 hours before reporting the culture as negative. Thus, the slow hemolysis of A. haemolyticum could potentially be missed unless routine cul-
tures are held for greater than 48 hours. The growth of other normal throat flora can also ob-
scure an A. haemolyticum diagnosis. Additionally, as A. haemolyticum has a rapid clinical re-
response to most antibiotics used to treat pharyngitis, antibiotic therapy initiated prior to speci-
men collection could result in a false-negative culture.

The exanthem of A. haemolyticum, associated with roughly 50% of cases, appears as an erythe-
matous, blanching, maculopapular eruption that is scarlatiniform in nature. It is often pruritic
and begins on the extensor surfaces of the arms and legs before progressing to the chest and
back. Classically, the exanthem spares the face, palms and soles. While the exact mecha-
nism of exanthem is unknown, the phospholi-
pase D toxin is believed to play a role.

The cutaneous presentation of our patient was unusual. The presence of numerous vesicles in
focal areas and targetoid lesions in others is rare in reported cases of A. haemolyticum, and
prompted us to complete a biopsy to rule out an erythema multiforme reaction. Banck and Ny-
man reported rare cases of erythema multiforme associated with A. haemolyticum, however skin
biopsies were not performed. Mehta reported an erythematous, urticarial eruption with small an-
nular rings associated with the bacterium. Such cases should prompt dermatologists to consider
A. haemolyticum infection in the differential di-
agnosis of young adults with severe pharyngitis.
and a multiforme rash, especially considering the likely underreported incidence of such infection. Treatment with erythromycin, azithromycin, doxycycline, or cephalosporins should lead to prompt clearing of the pharyngitis and amelioration of the rash.3,5

REFERENCES


