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CLINICAL reports

Case Report: *Pseudomonas aeruginosa* infection of the lips

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Introduction

An opportunistic organism can be defined as one which is not normally pathogenic to man, but, in the presence of debilitating illness or injury, can be responsible for serious infection or even death.[1, 2]

Pseudomonas aeruginosa is such an organism, considered to be of low virulence for healthy patients, but quite pathogenic for those patients who have lowered resistance due to infection, drug therapy, or poor nutrition.[2-4]

Literature Review

Distribution

P. aeruginosa is a gram-negative rod found widely distributed in nature; many serotypes are reported to be of world-wide occurrence.[2, 5-8] It has been isolated from oral infections,[3] from a case of Ludwig's angina,[9] and from stools of many patients suffering from summer diarrhea.[1] This organism was found to have a 7.6% incidence of nasal carriage in 5,109 infants,[10] and it was found as a transient in the saliva of 1% of 400 individuals.[11]

Mode of action

The mode of action of *P. aeruginosa* is linked to its fractions, lecithinase and protease. The lecithinase is responsible for edema and induration of the skin while the protease seems to be responsible for hemorrhagic and necrotic lesions.[12, 13]

Treatment

Treatment of systemic infections caused by *P. aeruginosa* requires the use of the antibiotics gentamicin and carbenicillin,[2] the combination of which has been demonstrated to be synergistic against this organism. The drugs should not be mixed for simultaneous administration since antagonism may occur in aqueous solution.[14] Polymyxin B can be considered an alternate antibiotic.[15] Due to the serious nature of systemic *P. aeruginosa* infection, treatment sometimes yields unimpressive results.

Treatment of local or superficial infection is directed toward drying of the area and lowering of the pH through the use of Burow's solution (aluminum acetate) or acetic acid. Systemic therapy is not indicated.[6, 7]

In the case review presented, 1% acetic acid soaks applied to the lips for one-hour periods, three times a day for ten days, were employed. This treatment regimen was utilized for a child who developed *P. aeruginosa* infection of the lips following a long history of involvement with juvenile bullous pemphigoid; hypochromic, microcytic anemia; and sickle cell trait.

Case review

M.S. is a 12½-year-old black female admitted to the Medical University Hospital for the fourth time. In April, 1974, this child was diagnosed to have juvenile bullous pemphigoid. The current hospital admission was necessary due to acute exacerbation of lip and oral lesions leading to inability to eat. The lip lesions had been present for about a month with acute problems developing 4–5 days prior to this hospital admission.

Admission physical exam

Significant findings were as follows: temperature, 101.4 axillary; eyes, clouding of lenses bilaterally with the left greater than the right possibly due to prednisone therapy for juvenile bullous pemphigoid; lips, edematous with vesicles and pustular lesions present on both lips (Fig. 1); oral cavity, numerous white and reddish ulcerations and vesicles present on the buccal mucosa bilaterally opposite the molars and bicuspid

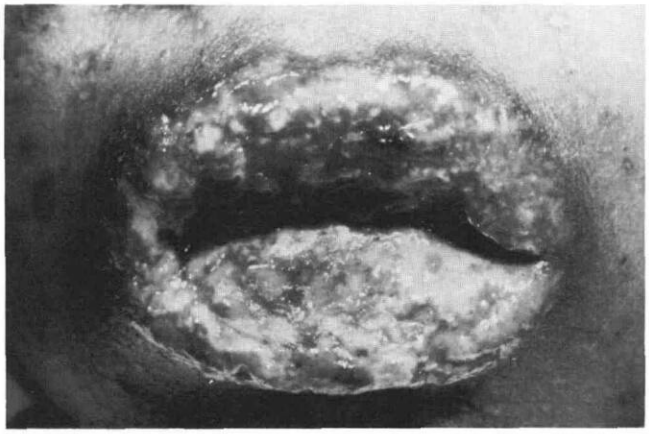

Fig. 1.

teeth; dorsum of the tongue on the lateral aspects erythematous with whitish, raised lesions indicative of oral moniliasis (subsequent cultures of specimens obtained from the lateral aspects of the tongue and mucosal lesions demonstrated Candida organisms); skin, dry with evidence of old scars on face, neck, and ears thought due to previously ruptured skin bullae.

Herpangina associated with group A Coxsackie viruses is characterized by whitish or grayish vesicular and ulcerative lesions on the tonsils, anterior tonsillar pillars, soft palate, pharynx, and posterior buccal mucosa.[16]

Clinical location of the oral lesions did not follow this distribution of herpangina, but only after culture of these lesions demonstrated Candida organisms was herpangina ruled out.

Admission laboratory data

Significant findings were as follows: hemoglobin, 9.2; hematocrit, 27.7, consistent with the child's anemia.

Documentation of this child's medical problems began with persistent hypochromic, microcytic anemia, diagnosed at $4\frac{1}{2}$ years of age. Major complications encountered in treatment of the child were erratic follow-up and poor communication due to the child's family's moving around the country.

Summary of past medical history

For the first five years of her illness, she had the diagnosis of herpetic gingivostomatitis. From five to eight years of age, she was followed at a New York hospital with the diagnosis of chronic erythema multiforme. In April, 1974, a biopsy by direct immunofluorescence showed subepidermal bullae with localization of IgG, IgA, and complement consistent with juvenile bullous pemphigoid. A biopsy in September, 1976, showed chronic inflammation consistent with Stevens-Johnson syndrome. A repeat biopsy in November, 1976, was negative for immunoglobin and complement, consistent with Stevens-Johnson syndrome.

Summary of past laboratory data

Serum iron in 1974 was 30; in October, 1976, it was 34; and in November of 1976, it was 20 with iron-binding capacity of 186. These findings related to the child's anemia.

During the patient's current hospitalization, oral examination revealed swollen, erythematous lips with multiple crusting, vesicular, purulent lesions (Fig. 1). Culture of the purulent lip lesions demonstrated 100% *P. aeruginosa.* The oral mucosa had numerous ulcerations and vesicles as related in the admission physical exam, and a diagnosis of moniliasis was confirmed.

Treatment of the lip lesions was accomplished with the use of 1% acetic acid soaks applied to the lips for one hour, three times a day for 10 days, and Mycostatin used to treat the moniliasis.

The patient responded very well to the above treatment regimen, and was soon comfortable and able to eat. Following the course of therapy, the patient was discharged from the hospital. She was to be followed in the outpatient clinics for medical follow-up of the following conditions: (1) juvenile bullous pemphigoid; (2) hypochromic, microcytic anemia; and (3) sickle cell trait.

Due to her long and persistent medical problems and attendant family problems, she was readmitted to the hospital one month later for pediatric psychiatric care with the diagnosis of chronic depression and cachexia.

Discussion

The above case review documented the need to be aware of the severe pathogenic potential of *P. aeruginosa* in debilitated patients. The treatment consisting of 1% acetic acid soaks applied to the lips was successful for this patient, but, if systemic involvement had occurred, the outcome could have been far more serious.

Summary

A $12\frac{1}{2}$-year-old black female who demonstrated *Pseudomonas aeruginosa* infection of the lips as but one problem associated with a problematic medical history spanning eight years was successfully treated. The pathogenesis of *P. aeruginosa* to a debilitated patient was shown.

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