CASE REPORT

Arcanobacterium Haemolyticum: two case reports

Arcanobacterium Haemolyticum: due casi clinici

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SUMMARY

Two uncommon presentations of *Arcanobacterium Haemolyticum* infection (sinusitis and pharyngitis) are described, emphasizing the poor response to commonly used antibiotics and the possibility of serious local and systemic complications. The difficulties still encountered in the clinical diagnosis are underlined, since this organism could easily pass unrecognized in bacteriological cultures.

KEY WORDS: Sinusitis • Pharyngitis • *Arcanobacterium Haemolyticum*

RIASSUNTO

In questo lavoro presentiamo due rare forme di infezione da Arcanobacterium Haemolyticum (sinusite e faringite), sottolineando la scarsa risposta ai comuni antibiotici utilizzati e la possibilità di complicanze locali e sistemiche. Esistono ancora difficoltà nella diagnosi clinica di queste rare infezioni, poiché si tratta di un microrganismo facilmente misconosciuto nelle colture batteriologiche.

PAROLE CHIAVE: *Sinusite • Faringite • Arcanobacterium Haemolyticum*

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Introduction

Arcanobacterium Haemolyticum (*A. Haemolyticum*), a coryneform Gram-positive bacillus, is a rare cause of head and neck infections, pharyngitis and sinusitis in teenagers and young adults [1 2]. It is rarely isolated in most clinical laboratories, due to many difficulties in its recognition.
Two cases of *A. Haemolyticum* infection are reported, underlining clinical and diagnostic aspects.

Case 1

A 38-year-old male patient presented with a one-year clinical history of unilateral left-sided nasal obstruction, purulent rhinorrhea and frontal headache. Antibiotic treatment (penicillin) previously prescribed by a physician was not associated with any improvement in symptoms. ENT examination with rigid nasal endoscope revealed a smooth friable mass, which did not bleed when palpated, arising apparently at the level of the left middle meatus. Purulent rhinorrhea was detected on the floor of the left nasal fossa. Examination of the postnasal space was normal. White blood cell count was 13000/μL, with polymorphonuclear leukocytosis. Body temperature was normal. Exanthem was absent.

Computed tomography (CT) of the nose and paranasal sinuses demonstrated a solid mass with homogeneous enhancement, arising from the maxillary sinus, and confirmed the presence of left ethmoid and frontal sinusitis, without signs of bone destruction (Fig. 1). The patient was initially treated with ceftriaxone and betamethasone given in intramuscular (im) injection; after 5 days, with the patient under general anaesthesia, an endonasal endoscopic approach was performed by means of 0 and 30 degree Storz (Tuttingen, Germany) telescopes; the mass was completely resected, by a left middle meatal antrostomy, and the purulent material aspirated from the left middle meatus was submitted for culture of aerobic and anaerobic bacteria. Following this surgical procedure and with continued antimicrobial therapy, the patient's condition improved and he was discharged from hospital 5 days after admission.
Histological examination with haematoxylin-eosin (H&E) of the nasal mass was indicative of chronic inflammation.
Aerobic and anaerobic cultures grew moderate amounts of a Gram-positive bacillus, catalase-negative and beta-haemolytic on sheep blood agar; at 48 hours, the organism produced non-pigmented colonies 1 mm in diameter, surrounded by a zone of haemolysis 3-5 mm in diameter: this was identified as *A. Haemolyticum*. Antibiotic sus-

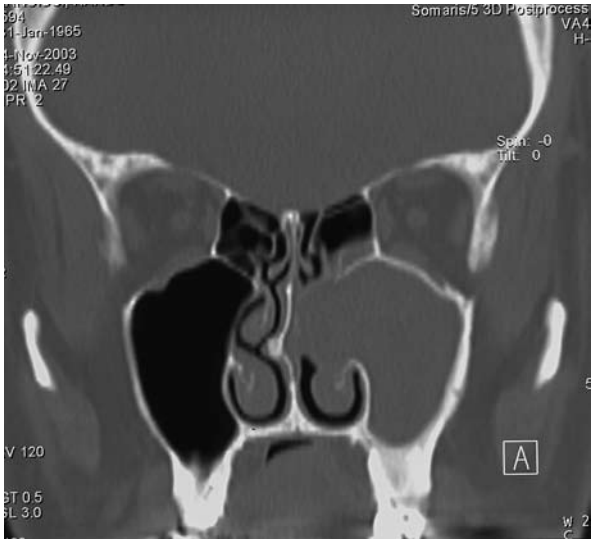

Fig. 1. CT of nose and paranasal sinuses demonstrated a solid mass with homogeneous enhancement, arising from maxillary sinus, and confirmed the presence of left ethmoid and frontal sinusitis, without signs of bone destruction.

ceptibility testing revealed that the organism was susceptible to penicillin, ampicillin, ceftriaxone, erythromycin and resistant to trimethoprim-sulfamethoxazole.
Antimicrobial treatment was continued for 10 days; the patient remained free of disease at follow-up 6 months later.

Case 2

A 43-year-old female patient presented with a one-year clinical history of recurrent pharyngitis, recently characterized by increasing sore throat and a red rash over her body. ENT examination revealed only the presence of pharyngeal hyperaemia. White blood cell count was 21300/μL with polymorphonuclear leukocytosis. Antistreptolysin O titre was negative. The patient presented fever which ranged from 37.6 to 38.5 °C. A throat culture was obtained; in the bacteriological culture, *A. Haemolyticum* was identified. Antibiotic sensitivity testing revealed that the organism was susceptible to penicillin, ceftriaxone, clindamycin, azithromycin, ciprofloxacin and resistant to vancomycin and trimethoprim-sulfamethoxazole. Oral amoxicillin/clavulanate potassium was prescribed. Since there was no clinical improvement, antimicrobial treatment was changed: the patient received administration of ceftriaxone im. Complete resolution of clinical findings was obtained after 7 days treatment.

Discussion

A. Haemolyticum, an aerobic, slowly growing, catalase-negative, gram-positive bacillus, has been reported as an infrequent cause of peritonsillar abscess, pharyngitis, and tonsillitis in children and young adults. Risk factors for the development of this infection remain to be identified [3-5].
The organism, moreover, has been isolated from patients with chronic skin ulcers, soft tissue infections, deep tissue abscesses, meningitis, pneumonia, endocarditis and bacteriaemia. Sinusitis is an uncommon presentation of *A. Haemolyticum* [2 6 7]: only 3 cases have previously been described in the literature.
Cervical lymphadenopathy and erythematous rash frequently accompany the infection. On account of the rash, some patients may be misdiagnosed as having scarlet fever caused by group A beta-haemolytic streptococci [4].
Carlson et al. [3 8] reported the response of *A. Haemolyticum* to many antimicrobial agents, such as penicillin, cephalosporins, erythromycin, azithromycin, clindamycin, vancomycin, doxycycline, and ciprofloxacin, and the resistance to others, such as trimethoprim/sulfamethoxazole. However, despite *in vitro* response to penicillin, many strains of *A. Haemolyticum* have been shown to be tolerant to the drug and clinical and bacteriological treatment failures often occur. Also in our two cases, as penicillin administration was ineffective in eradication of the infection, on the basis of antibiotic sensitivity testing, we changed antimicrobial therapy with ceftriaxone, associated with surgical treatment in case n. 1, achieving an adequate clinical response within 10 days of treatment.
Rapid identification of this bacillus is, therefore, necessary in order to begin correct antibiotic therapy even though it could easily pass unrecognized in bacteriological cultures as a result of its slow growth, coryneform appearance in the Gram stain and weak haemolytic activity on conventional laboratory media, such as sheep blood agar. For these reasons, this infection often remains unrecognized and the treatment inadequate [1]. Recent studies in the literature [9 10] have shown that patients from whom *A. Haemolyticum* was cultured, developed specific antibody responses to the bacteria. Votava et al. [9] reported the detection of *A. Haemolyticum* phospholipase D neutralizing antibodies in patients with acute tonsillitis. However, these tests are not yet available as a matter of routine.
On the basis of this atypical infection of the upper respiratory tract and the possibility of serious local and systemic complications, we suggest that, in all those cases in which no improvement is achieved with conventional penicillin therapy and/or the infectious disease recurs frequently, bacterial culture be performed in order to exclude the presence of this bacillus that could be completely eradicated.

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