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Rothia mucilaginosa bacteraemia in an immunocompetent paediatric patient: a new pathogen to take into account. A case report

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SUMMARY

Rothia mucilaginosa, previously known as *Stomatococcus mucilaginosus*, is a Gram-positive coccus that is part of the oropharyngeal microbiota and upper respiratory tract. It is mainly related to infections in immunosuppressed patients.
Given its complex microbiological identification, its prevalence may be underestimated. We describe in this article a case of bacteraemia by *Rothia* in an immunocompetent paediatric patient without epidemiological or medical relevant history. In the available literature no cases of bacteraemia by *Rothia mucilaginosa* in immunocompetent paediatric patients have been reported. Given the characteristics of our patient, the publication of this case is of interest. Once the diagnosis of *Rothia mucilaginosa* has been made, the correct functioning of the immune system of the patient should be checked.

Keywords: bacteraemia, *Rothia mucilaginosa*, paediatric, immunocompromised.

INTRODUCTION

Rothia mucilaginosa (previously *Stomatococcus mucilaginosa*) is part of the normal oropharyngeal microbiota and the upper respiratory tract [1, 2]. It is generally not pathogenic, normally only causing pathology in immunocompromised patients. It has been implicated in pneumonia and other lower airways infections (lung abscess, pleural empyema).
It has also been isolated in other infections in patients presenting underlying risk factors [1, 2]. The cases of patients suffering from infection by *Rothia mucilaginosa* published in recent years, however, are few and relate predominantly to immunosuppressed patients [3].
Rothia mucilaginosa is arranged in clusters, tetrads or pairs. It forms a bulky capsule [1, 2]. The colonies are convex, mucoid, whitish, non-hemolytic, of gummy consistence and strict adherence to the agar. All these features make manipulation and microbiological identification difficult, so its prevalence may be underestimated [4-6]. We describe one case of bacteremia by *Rothia mucilaginosa* in an immunocompetent child. This is an exceptional case because no similar cases have been published.

CASE REPORT

The patient is a male of nineteen months who presented with cold symptoms and high fever for

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72 hours without improvement despite antibiotic treatment.

He had a history of prematurity and was admitted to the hospital in the first month of life due to bronchiolitis. Subsequently, he was diagnosed with episodic-occasional asthma and has received maintenance treatment with Montelukast Sodium (4 mg/day).

As an antecedent of interest, in the previous month, the patient had presented an acute otitis media (that was treated with antibiotics) and a herpangina (probably, these lesions caused, in this case, an alteration in the integrity of the pharyngeal mucosa that facilitated the passage of *Rothia mucilaginosa* into the bloodstream). The boy was properly immunized.

The patient presented no outstanding findings on physical exploration, with an acceptable general state, hyperemia and pharyngeal congestion. We performed a blood test that showed leukocytosis (18,000 leukocytes/MMC) with neutrophilia and high levels of C-reactive protein (68.2 mg/l) and procalcitonin (1.62 ng/ml). In the blood culture, *Rothia mucilaginosa* grew in pure culture and was identified by conventional methods and mass spectrometry MALDI-TOF (Bruker, F. Soria, Spain). Antibiotic sensitivity was determined through minimum inhibitory concentration by Etest (bioMérieux, Marcy l'Etoile, France). Additionally, we performed a chest X-ray, which was normal.

The patient started treatment with 3rd generation intravenous cephalosporins on the first day (150 mg/k/day) for a total of 5 days. The antibiogram confirmed sensitivity to cefotaxime and azithromycin of *Rothia mucilaginosa*; thus, the patient received azithromycin for 5 more days at home (orally, 10 mg/k/day). A monitoring blood culture at the end of treatment was negative. We could not diagnose a transient bacteremia, because we only had two blood cultures one week apart.

After analysing the current literature about the infections caused by *Rothia mucilaginosa,* we decided to perform a complete study of immunity as well as a follow-up at the outpatient department of infectious diseases of our hospital. The clinical evolution was favorable and the study of immunity (immunoglobulin levels and lymphocyte subpopulations) revealed results within the normal range.

DISCUSSION

Currently, there is no existing literature with cases of bacteremia by *Rothia mucilaginosa* in immunocompetent pediatric patients. Several isolated cases have been published, most of them in immunosuppressed or neutropenic patients. One of them involved a patient who underwent transplantation of hematopoietic progenitors and developed bacteremia by *Rothia mucilaginosa* secondary to infection of a permanent central venous catheter [7]. In 2013, a series of cases from a general hospital was published, describing *Rothia mucilaginosa* in 21 samples from 20 patients [3]. All the patients were adults and presented (all except one) some predisposing factor (COPD, bronchiectasis or hematological neoplasm). The biological sample in which the *Rothia mucilaginosa* was most frequently isolated was sputum, and the most frequent form of presentation was pulmonary infection [8, 9].

The identification of *Rothia mucilaginosa* is complex but facilitated by mass spectrometry (MALDI-TOF). Studies on minimum inhibitory concentration suggest that the bacterium is usually sensitive to vancomycin, variably susceptible to penicillin, oxacillin, aminoglycosides and cotrimoxazole and resistant to quinolones. Another publication describes a case similar to ours in a child of three years of age with Shwachman-Diamond syndrome [10, 11]. In immunocompetent adult patients without predisposing factors, we found only one case of pneumonia by *Rothia mucilaginosa* [4].

Given the differential characteristics of our patient, the publication of such a case is of interest. In view of the frequent association of *Rothia* infections with alterations of the immune status, a study of the immune functions of the infected patient is recommended. Early diagnosis and timely administration of appropriate antibiotic treatment are necessary for cure. Contributions like the present one can help to define the clinical spectrum of the infections by *Rothia.*

Conflict of interest

None.

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