

Mitral endocarditis due to *Rothia aeria* with cerebral haemorrhage and femoral mycotic aneurysms, first French description

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Abstract

Rothia aeria is a *Rothia* species from the *Micrococcaceae* family. We report here the first French *R. aeria* endocarditis complicated by brain haemorrhage and femoral mycotic aneurysms. Altogether, severity and antimicrobial susceptibility should make us consider the management of *R. aeria* endocarditis as *Staphylococcus aureus* methicillin-susceptible endocarditis.

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Keywords: Infective endocarditis, mycotic aneurysm, neurological involvement, *Rothia aeria*, *Rothia dentocariosa*

Original Submission: 13 April 2016; **Revised Submission:** 2 June 2016; **Accepted:** 6 June 2016

Article published online: 11 June 2016

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Introduction

Rothia species are Gram-positive bacteria belonging to the *Micrococcaceae* family [1]. *Rothia* cause a wide range of serious infections, especially in immunocompromised hosts [2]. *Rothia aeria* colonizes the human oral cavity and upper gastrointestinal tract [3]. It is an uncommon pathogen associated with infectious endocarditis (IE). We report the first French case of *R. aeria* IE complicated by brain haemorrhage and femoral mycotic aneurysms, in an immunocompetent patient.

Case report

A 57-year-old man born in Nepal was hospitalized in January 2016 for fever reaching 39.4°C, chills, diarrhoea and headache. He had lived in the Paris area for the last 30 years. He had a previous history, in 2008, of right sub-thalamic ischaemic

stroke and severe mitral insufficiency without ventricular dysfunction for dystrophic mitral valve. He did not have recent dental care and had no history of intravenous drug injections. At admission the patient presented with an already known 4/6 meso-systolic rough mitral murmur without cardiac failure and a painful erythema of the right hand (Fig. 1a). The hand's erythema disappeared in 2 days. Two aerobically incubated blood cultures performed at admission were positive with Gram-positive branching filamentous bacilli (Fig. 1b,c) within 41 and 86 h, as were the seven other blood culture sets. Colonies were identified as *R. aeria* using matrix-assisted laser desorption-ionization time-of-flight mass spectrometry (see Fig. 2). Drug susceptibility showed susceptibility to ampicillin (MIC 0.016 mg/L). Trans-oesophageal echocardiography revealed mitral IE with several nearby vegetations of the ring base, flail PI without heart dysfunction or abscess (Fig. 1f). Pre-operative screening for systemic embolism showed a left frontal subarachnoid haemorrhage on brain magnetic resonance imaging and a hypermetabolic focus in the femoral artery compatible with a mycotic aneurysm on positron emission tomodensitometry (Fig. 1d,f). Empiric antibiotherapy was introduced according to European guidelines [4] with intravenous amoxicillin 2 g every 4 h and gentamicin 3 mg/kg once a day. Surgical mitral replacement by bio-prosthesis with annular reconstruction was performed according to the risk of cerebral

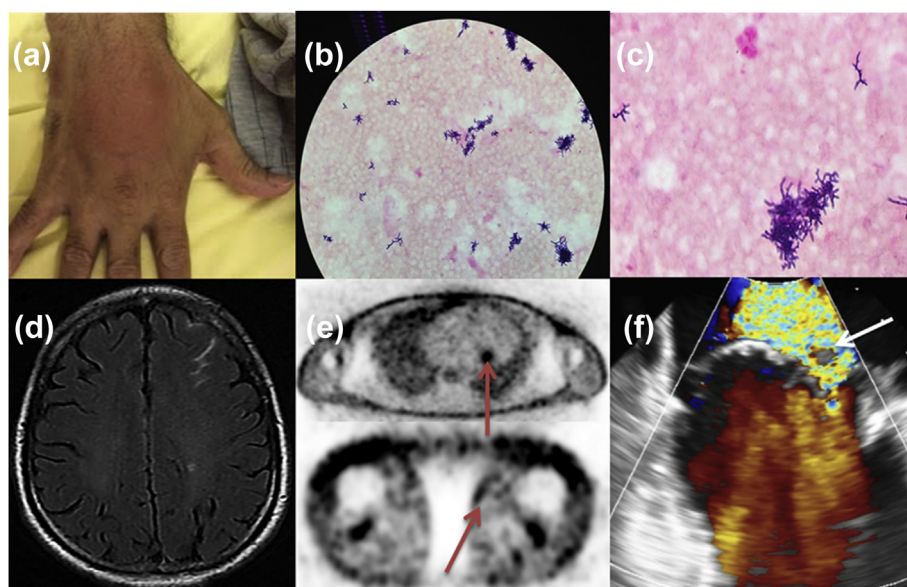


FIG. 1. *Rothia aeria* endocarditis, clinical, bacteriological and radiological features. (a) Tenosynovitis of the right hand. (b, c) Gram staining with Gram-positive bacilli forming branched chains. (d) Brain magnetic resonance imaging in FLAIR sequence with left frontal subarachnoid haemorrhage. (e) Hypermetabolic focus of the mitral annulus indicated by red arrow at ¹⁸F-fludeoxyglucose positron emission tomography scan. Moderately hypermetabolic focus in the middle third of the left deep femoral artery pointed with red arrow at ¹⁸F-fludeoxyglucose positron emission tomography scan. (f) Trans-oesophageal echocardiography with vegetation indicated by white arrow.

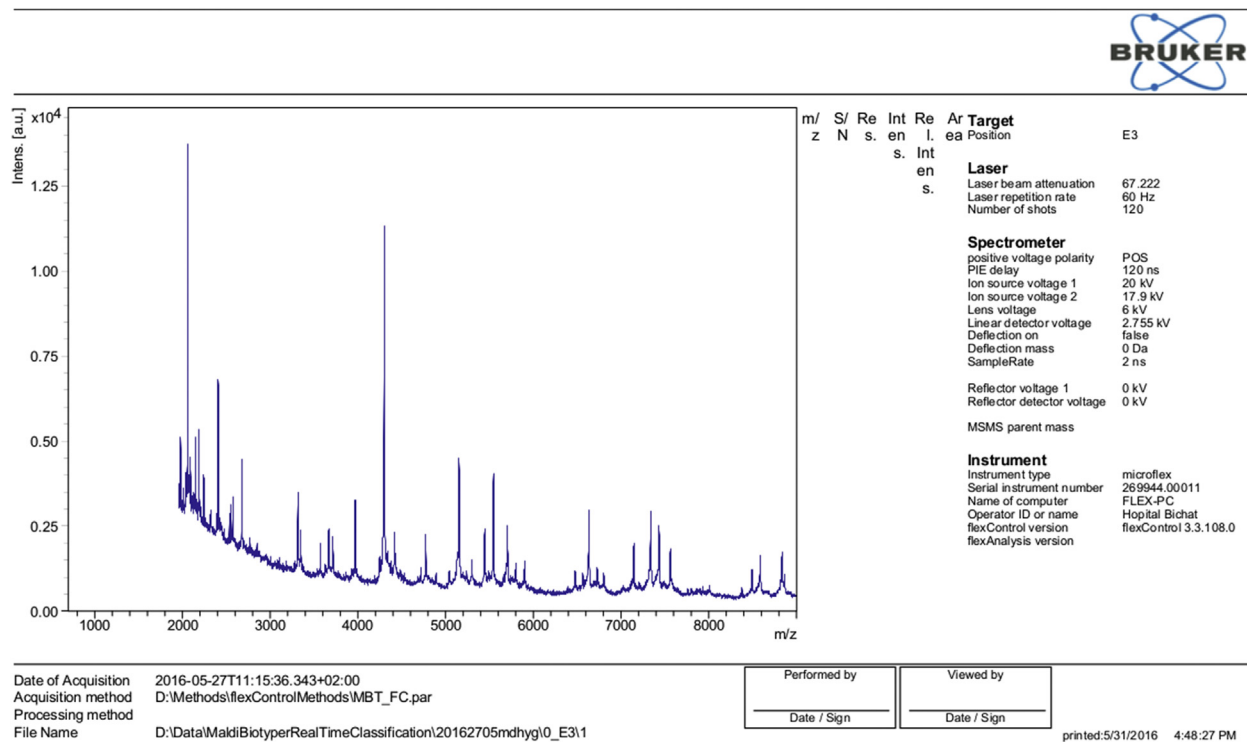


FIG. 2. Matrix-assisted laser desorption/ionization-time of flight mass spectrometry profile for the *Rothia aeria* isolated in the patient blood culture.

embolism and cardiac abscess at day 10 after initiation of antibiotics. Blood culture negativity was obtained at day 3 after antibiotics initiation and valvular culture was negative. 16S rRNA gene sequence analysis was performed on the mitral sample and confirmed the identification of *R. aeria* (GenBank Accession sequence KX270977) with a maximal identity of 100% for *R. aeria* type strain AI-17B (GenBank accession number AB071952). Antibiotic combination was maintained for 2 weeks, then amoxicillin alone for a further 4 weeks. All clinical and biological symptoms resolved. Subarachnoid haemorrhage regressed and trans-oesophageal echocardiography showed a good functioning of the prosthesis and the absence of added elements.

Discussion

Initially *R. aeria* was known as *Rothia dentocariosa* genomovar II [5] and could be mistaken for *Nocardia* spp. except for its antibiotic sensitivity [6]. Infective endocarditis due to *R. aeria* ($n = 7$) and *R. dentocariosa* ($n = 25$), are reported to be associated with central nervous system involvement in 13 of the 32 cases (40%) published [7–9]. Antibiotic susceptibility of the *R. aeria* strains isolated in all case reports showed sensitivity for ampicillin and gentamicin.

We report the first infective IE due to *R. aeria* described in France and confirm that *R. aeria* IE is serious and associated with mycotic aneurysms and central nervous system involvement. Fast and aggressive management with an antibiotic combination including penicillin for 4–6 weeks, and valve replacement when necessary, is required and could limit the occurrence of complications and death.

Conflict of Interest

The authors have no conflicts of interest to declare.

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