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Letter to the Editor

RE: 'Streptococcus *pluranimalium*: A novel human pathogen?'

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ABSTRACT

Streptococcus pluranimalium as a novel human pathogen has been reported by several authors in various contexts. In all reported cases in humans the microorganism was detected by the Vitek2®. The great advances with the introduction of new analytical techniques such as MALDI-TOF or 16S rRNA analysis enabled a more detailed discrimination of pathogens such as these nonhemolytic streptococci. In the cases of such similar gene sequences such techniques are absolutely essential to identify the exact strain for this highly conserved 16S rRNA gene. However, until now neither a sequence analysis of the 16S rRNA gene nor PCR nor MALDI-TOF techniques could define Streptococcus pluranimalium in humans. We conclude that according to our best present knowledge there exists no conclusive evidence for a human infection of Streptococcus pluranimalium even when using most advanced and exact identification techniques until now.

Dear Editors,

We read with great interest the case report by Aryasinghe et al. [1] entitled 'Streptococcus pluranimalium: A novel human pathogen?'. The article describes the case of a 17-year-old male with subdural empyema caused by Streptococcus pluranimalium as a possible complication of subclinical frontal sinusitis. In addition to this case Streptococcus pluranimalium has been reported in the literature on twelve occasions in humans (Table 1) [2–7].

Aryasinghe et al. make a brief reference to two other reported cases of Streptococcus pluranimalium in humans. The first paper describes only that the strain was grown on blood cultures taken during a febrile episode in a neutropenic patient [7], the second case occurred in a 53 year old female who presented with septic arthritis and finally died from septic shock. Streptococcus pluranimalium was grown on blood culture as well as pus aspirated from the infected joint [5].

In all reported cases in humans the microorganism was detected by the Vitek2®. Paolucci et al. described that Streptococcus pluranimalium was not detectable by the PCR test [7]. However, great advances in microbiology have led to the introduction of new analytical techniques such as MALDI-TOF or 16S rRNA analysis during the last decades, thus enabling a more detailed discrimination of pathogens with similar gene sequences. For closely related species such as the nonhemolytic streptococci a sequence analysis of the highly conserved 16S rRNA gene is required to identify the exact strain. This was only performed by Dhotre et al. [2] revealing that none of the 6 isolates were identified as Streptococcus pluranimalium. Four strains were identified as Streptococcus mitis, one as Streptococcus tigurinus and one as Granulicatella adiacens.

Recently we treated a 95-year old women with transcatheter aortic valve infective endocarditis (TAVIE). Streptococcus pluranimalium was detected from blood culture by Vitek2®. However, neither a sequence analysis of the 16S rRNA gene, nor PCR nor MALDI-TOF techniques could define uniquely the exact pathogen.

The case of Aryasinghe et al. as well as the other reported cases highlight the possibility of a novel human pathogen, but indicate the problem of misidentification with normal culture based identification systems [8].

We conclude that according to our best present knowledge there is no conclusive evidence of a human infection of Streptococcus pluranimalium even when using the most advanced and exact present day identification techniques.

Conflict of interest

None.

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Table 1
Reported cases of Streptococcus pluranimalium infection in humans between 2012 and 2017, [§]After 16S rRNA analysis identified as: 4x Strept mitis, 1x Strept tigurinus, 1x Granulicatella adiacens; F female, M male, ND no data, [$] Microorganism not detectable by PCR test.

Published	Gender	Age	(n)	Disease	Diagnostic	Microbiological prove	Discussed etiology	Outcome
2012	ND	ND	1	febrile neutropenia	PCR (blood)	Vitek2®, SeptiFast[$]	ND	ND
2014	F	53	1	Septic arthritis	blood culture, aspirate of pus	Vitek2®,	unknown	died
2014	M	17	1	subdural empyema	aspirate of pus	Vitek2®, 16SrRNA	left frontal sinusitis, dental infection	full recovery
2014	ND	ND	6[§]	periodontitis, bacteremia	5 subgingival plaque, 1 blood culture	Vitek2®	Periodontitis, extraction of a tooth	ND
2014	F	F	1	bacteremia	blood culture	Vitek2®	piecocision procedure (teeth)	ND
2015	M	M	1	endocarditis (mitral- and aortic valve)	blood culture	Vitek2®	intravenous drug use	died
2016	M	M	1	endocarditis (mitral valve)	blood culture	Vitek2®	farm animal	full recovery
2017	F	F	1	TAVI associated endocarditis	blood culture	Vitek2®,16SrRNA, MALDITOF®	extraction of a tooth	died

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Ethical approval

None.

Consent

None.

Author contribution

Peter Pongratz: Data collection, data analysis and interpretation, writing the paper.

Meinolf Ebbers: Data collection, data analysis and interpretation.

Hilte Geerdes-Fenge: Data collection, data analysis and interpretation.

Emil C Reisinger: data analysis and interpretation, writing the paper.

Guarantor

Peter Pongratz.

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