

Neisseria canis infection: a case report

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Abstract

The third case report, which is the first in Australia, of human infection with *Neisseria canis* is documented. This is the first case report in which the pathogenicity of this organism for humans is unequivocally demonstrated. *Commun Dis Intell* 1999;23:221.

Introduction

Neisseria canis (*N. canis*) was first described by Berger in 1962.¹ The bacterium's normal habitat is the throat of the cat and dog. It is regarded as a true *Neisseria* with phenotypic properties that allow its recognition as a distinct species.^{2,3} Only two previous case reports of human infection have been found by the authors.^{4,5} The first case of human infection with *N. canis* was published by Hoke and Vedros⁴ in 1982. This isolate came from a cat bite wound on a child. No other clinical details were described. In 1989 *N. canis* was reported in a mixed culture that included *Pasturella multocida* (*P. multocida*) and *Eikenella corrodens* from a cat bite wound on the arm of a previously healthy 36 year old woman. The wound was inflamed and the patient was successfully treated with amoxicillin. *P. multocida* was regarded as the primary pathogen in this case.⁵

Clinical Features

The patient, a 50 year old male normally in good health, presented with a purulent wound to the sole of his foot, with surrounding cellulitis. The patient recalled having trod on a dog bone a few days previously. A swab for culture was taken and antibiotics commenced (metronidazole and amoxicillin/clavulanic acid). Seven days later he made a complete recovery apart from some residual induration.

Methods

Laboratory Diagnosis

Standard bacteriologic techniques as outlined in the *Manual of Clinical Microbiology*⁶ were used. The Gram stain showed moderate numbers of polymorphs. A moderate pure growth of a small gram negative coccus was obtained on aerobic blood agar, with the formation of yellowish non-haemolytic, 2 - 4 mm slightly flat topped colonies after 48 hours. It grew well on nutrient agar but did not grow on MacConkey agar. The organism was a facultative anaerobe, non-capnophilic and growth at 37°C was better than at 30°C or 42°C. The remainder of the diagnostic tests were consistent with the identification of

N. canis, and it was sensitive to benzylpenicillin, erythromycin, and tetracycline but resistant to vancomycin.

A conserved segment (441 base pairs) of the isolate's RNA was subject to molecular studies, using BLAST analysis with the GeneBank⁷ data bank. A significant similarity was found with a sequence of 422 matching base pairs (95%) with GenBank Accession number L06170 - *Neisseria canis* ATCC 14687.

Discussion

It is considered without doubt that *N. canis* was pathogenic. Currently the organism is a very rare isolate associated with cat or dog contact, but it may be under reported. The laboratory diagnostic clues are the isolation of an oxidase positive, gram negative, non-fastidious coccus that is very strongly catalase positive and forms dull yellow flat-topped non-haemolytic colonies on Day 2. It is nitrate positive but otherwise essentially asaccharolytic and rather inert in its biochemical reactions. It is described in the literature as galactosidase negative, tributyrin hydrolysis negative, DNase negative, nitrite negative and polysaccharide synthesis negative.^{3,6} Currently there is no reason to suspect that the organism would not be covered by the current *Australian Antibiotic Guidelines*⁸ for the management of animal bites.

References

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