

INTRODUCTION

Zoonotic infections (zoonoses) are infectious diseases transmitted from companion, production and wild animals via direct contact or through food, water, or the environment. They comprise a significant proportion of existing and newly identified infectious diseases.^[5]

In the UK companion animals often live in close contact with humans. Dogs are by far the most popular pets and their direct contact with owners may increase the transmission risk of zoonotic infection, via contact with saliva from bites or licking.

Staphylococcus pseudintermedius and *Streptococcus canis* are commensals of the canine oral flora. They can also be opportunistic pathogens causing pyoderma, wound infections, urinary tract infections in dogs and other animals. ^[1,2,4]

Both organisms can cause rare opportunistic infections in humans, the severity of which can range from mild skin soft tissue infections to bacteraemia and endocarditis. ^[1,3] *S. canis* infections for example represent only 1% of all streptococcal infections. ^[4]

ORGANISMS

S. pseudintermedius (fig. 1) is a Gram positive, coagulase positive (free form) member of the *Staphylococcus intermedius* group,^[3] which can be miss identified in the laboratory on the basis of morphologic characteristics or when using rapid latex agglutination tests (produces a negative reaction).

S. canis is a beta-haemolytic Lancefield group G Streptococcus. It was first isolated in dogs, giving the bacterium its name.

Accurate and rapid identification of both these organisms is now possible since the introduction of Matrix-Assisted Laser Desorption/Ionization Time Of Flight (MALDI-TOF) mass spectrometry for bacterial identification. ^[1,3]



Figure 1 *S. pseudintermedius* on Columbia blood agar
Taken from www.vetbact.se Credit: Karl-Erik Johansson (BVF, SLU & SVA) & Lise-Lotte Fernström (BVF, SLU).

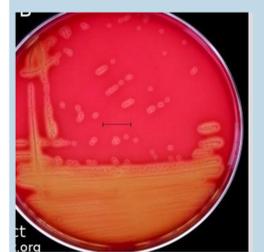


Figure 2 *S. canis* on Columbia blood agar
Taken from www.vetbact.se Credit: Karl-Erik Johansson (BVF, SLU & SVA) & Lise-Lotte Fernström (BVF, SLU).

CASE REPORT

- 63 F presented to A+E May 17 after a fall in the bathroom
 - PC: deep soft tissue laceration (15x12.5 cm) extending to the tibia without bony injury (Figure 3).
 - PMH: non-insulin dependent Type 2 Diabetes and asthma
 - SH: smoker
- Initial management included (Figure 4):
- Debridement and washout
 - Adjunct antibiotics

Over next three months, the patient required:

- Repeated irrigation and debridement, due to tissue necrosis and infection (Figure 5)
- Received further course of oral antibiotics
- Further surgical debridement followed by split skin grafting
- Treatment of skin graft infection due to *S. pseudintermedius* and *S. canis* (figure 4 and figure 6)
- The patient reported that her dog had been licking the wound site.
- Clinical resolution of infection was achieved following further antibiotics (Figure 4)

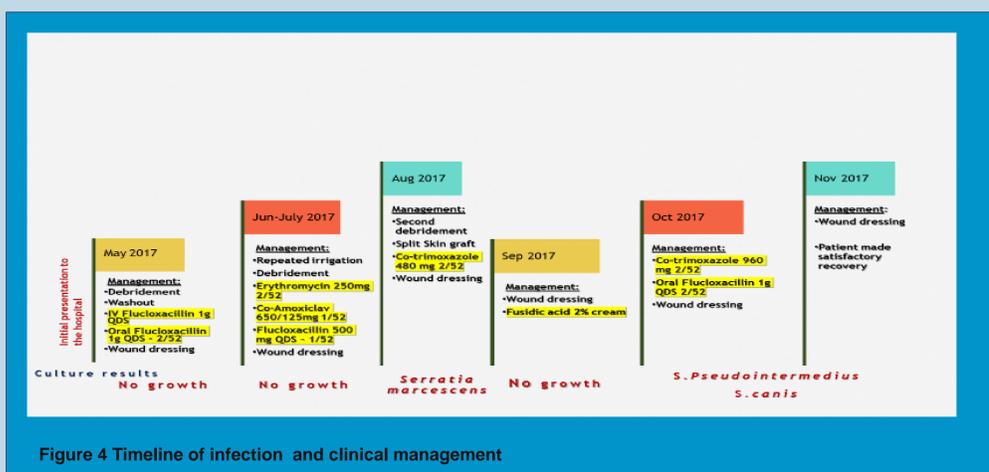


Figure 3 Wound at Initial presentation



Figure 5 Infected wound In June 2017



Figure 6 Infected skin graft

DISCUSSION

The incidence of human infections caused by *S. pseudintermedius* and *S. canis* is relatively low and likely underestimated due to problems with miss-identification in the laboratory.

In a retrospective review of 24 cases of *S. pseudintermedius* infection in Canada 92% of cases had contact with a dog at the time of infection and 75% of cases were skin and soft tissue infection (SSTi) ^[1]. Similarly *S. canis* has been shown to cause predominantly SSTi in humans ^[4].

Correlation between incidence of these zoonoses and immune status of the host as well as type of the contact between pet and the owner are the matters for future consideration.

CONCLUSIONS

- This case highlights the risk of infection with *S. pseudintermedius* and *S. canis* particularly when there is close contact with pets in the presence of breaks in the skin barrier.
- Dog owners should be aware that pets can be a source of potential infection, which can be easily avoided if simple precautions are taken.
- Introduction of new identification techniques such as MALDI-TOF mass spectrometry can help minimise miss-identification of these zoonotic infections.

ACKNOWLEDGEMENTS

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