Methicillin resistant Staphylococcal pyoderma in a dog – a case report

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BACKGROUND

- Staphylococcal deep pyoderma involves the dermis and hair follicles.
- Although less frequent, *Staph. aureus* isolates have been recovered from pets (cats) with pyodermas (Medleau and Blue, 1988)
- Methicillin resistance is due to the acquisition of mecA gene (with PBP2a protein).
- The protein (PBP2a) has a very low affinity for β-lactams antibiotics and confers resistance to beta-lactams.
- Methicillin-resistant staphylococci pose major clinical challenges in the treatment of canine bacterial pyoderma.

RESULTS

- Brain heart infusion agar - Round, convex and creamy yellow coloured colonies
- Gram's stain appearance
- **Positive** coagulase test
- Mannitol salt agar - change in colour of media from red to yellow
- Identified as *Staphylococcus aureus*
- Methicillin resistance - **Molecular Confirmation** by PCR (fig 1)
- **Sensitivity** to cephalexin, clindamycin, (fig. 2) amikacin and tetracycline
- **Resistance** to enrofloxacin (fig. 2), amoxicillin clavulanate, methicillin, ceftriaxone tazobactam and ceftriaxone (fig. 3)

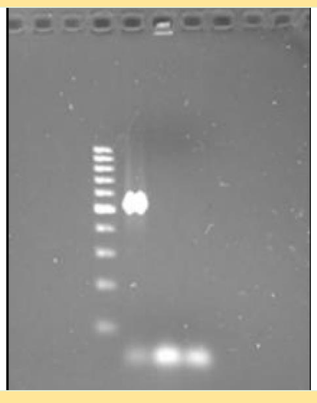
DISCUSSION

- Resolution of skin lesions after treatment with cephalexin (fig 5)
- Due to the close proximity to animals, veterinary staff and animal owners are at risk of acquiring MRSA.
- The emergence of MRSA in household pets is of concern in terms of animal health, and more importantly, the potential for animals to act as sources of infection or colonization of human contacts.

CONCLUSION

- PCR to detect *mec*A gene is the **"gold standard"** test for MRSA confirmation
- Antibiotic therapy should be based on susceptibility testing
- Advocate hand hygiene, environmental disinfection and personal protection to pet owners
- Pet animals are increasingly being implicated as sources of community associated MRSA (CAMRSA) to humans.

FIGURES



PCR profiles of MRSA DNA amplified with primers mecA- F and mecA- R, digested with Taq restriction enzyme and then separated on a 1.2% agarose gel.

Lane 1 - 100 bp ladder;
Lane 2 - positive sample (533bp);
Lane 3, 4 - negative samples

Figure 1

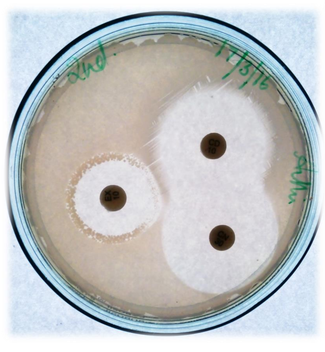


Figure 2

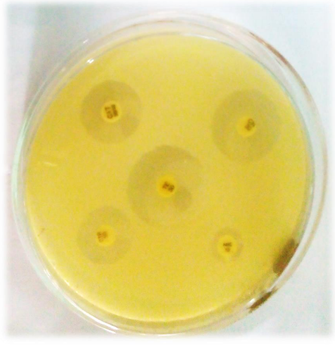


Figure 3

CASE HISTORY

Age: 7-years

Gender: Female

Breed: Rottweiler

History:

Diagnosed as Pyoderma by local vet

Unresolved skin problem

Clinical examination:

- Fever - 103.2° F (39.5 ° C)
- Generalized alopecia
- Extensive skin lesions - lateral and ventral chest and abdomen, limbs, periocular, and perianal regions
- Lesions: ulcerated, crusted, purulent discharge (fig. 4)
- *Negative* for Mites, fungal spores, blood parasites

Treatment

- Cephalexin (Lixen Pet, Virbac 600 mg) - 25 mg / kg body weight orally B.I.D for 3 weeks.
- Topical therapy – Chlorhexidine Shampoo
- Skin supplements

METHODOLOGY

Bacteriological examination

- Primary inoculation in brain heart infusion agar at 37 ° C for 24 hours
- Subcultured in Mannitol salt agar

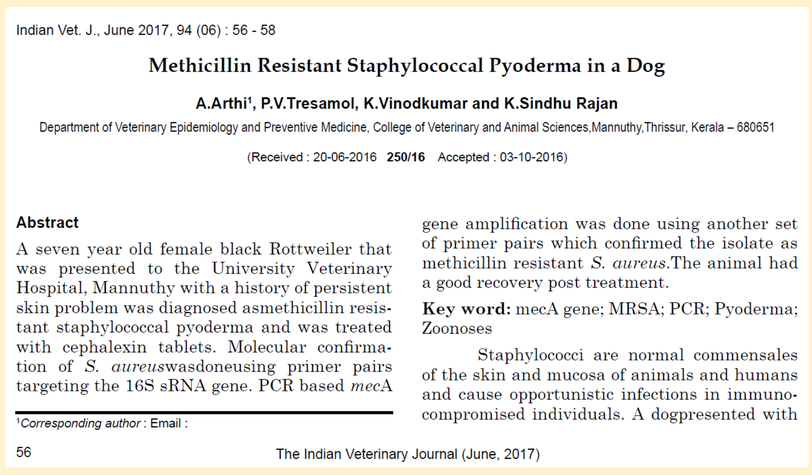
Polymerase Chain Reaction (PCR)

- specific primers targeting 16S rRNA gene of *S. aureus* (Amin *et al.,* 2011)
- *mec*A gene amplification (Shanehbandi *et al.,* 2014)

Forward primer - 5'AAA ATC GAT GGT AAA GGT TGG C 3'
Reverse primer - 5'AGT TCT GCA GTA CCG GAT TTG C 3'

Antibiogram - Disc diffusion test

PUBLICATION



Indian Vet. J., June 2017, 94 (06) : 56 - 58

Methicillin Resistant Staphylococcal Pyoderma in a Dog

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(Received : 20-06-2016 **250/16** Accepted : 03-10-2016)

Abstract

A seven year old female black Rottweiler that was presented to the University Veterinary Hospital, Mannuthy with a history of persistent skin problem was diagnosed asmethicillin resistant staphylococcal pyoderma and was treated with cephalexin tablets. Molecular confirmation of *S. aureus*wasdoneusing primer pairs targeting the 16S sRNA gene. PCR based *mec*A gene amplification was done using another set of primer pairs which confirmed the isolate as methicillin resistant *S. aureus*.The animal had a good recovery post treatment.

Key word: mecA gene; MRSA; PCR; Pyoderma; Zoonoses

Staphylococci are normal commensales of the skin and mucosa of animals and humans and cause opportunistic infections in immuno-compromised individuals. A dogpresented with

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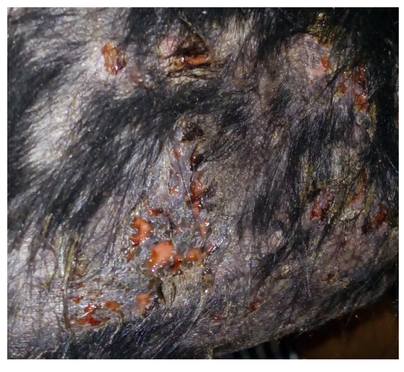

Figure 4 (before)

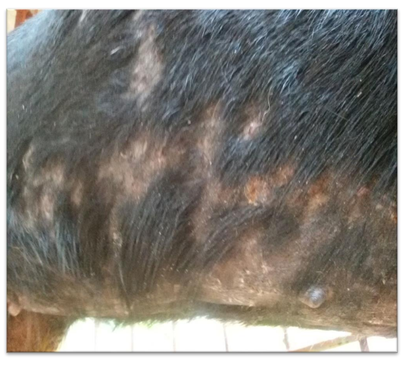

Figure 5 (after)

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ACKNOWLEDGEMENT: Prof. Jeroen Dewulf, Ghent University, AMCRA, Dean COVAS Mannuthy