

*Case Report***Therapeutic Considerations and Public Health Implications in the Management of Deep Pyoderma in a Dog with Linezolid****N. Madhavan Unny<sup>1\*</sup>, S. Sulficar<sup>2</sup> and Usha N. Pillai<sup>1</sup>**

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**Abstract**

An adult German Shepherd dog was presented with skin lesions. The dog was previously treated for the condition with improvement and then recurred later. On culture studies, *Staphylococcus aureus* and beta hemolytic *Streptococcus sp.* were present. Based on the clinical signs, the condition was diagnosed as deep pyoderma. Treatment was instituted with linezolid, based on sensitivity studies, with no recurrence. The public health implications should be carefully taken into consideration when using antibacterials at the highest end of the spectrum.

**Key words:** Deep Pyoderma, Dog, Linezolid

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**Introduction**

Pyoderma remains an important dermatological disorder in dogs. Diseases which weaken the immunity, systemic or cutaneous, were often considered as the most important cause which resulted in this disorder. Recently, it has been suggested that inflammatory changes of skin, including allergic causes should be given due consideration while investigating any case of pyoderma. Broadly pyoderma may be classified as surface, superficial and deep. Recurrent pyoderma is more commonly recorded in relation to superficial pyoderma. The use of newer antibacterials is often discouraged in veterinary practice owing the possibility of development of antibacterial resistance in human population (Weese *et al.*, 2011). This report discusses the occurrence of recurrent pyoderma in a dog and its treatment with linezolid and supportives.

## Materials and Methods

A four-year-old German shepherd dog was presented to the University Veterinary Hospital, Kokkalai, Thrissur, with the complaint of skin disorder. History revealed that the skin lesions recurred four times during the past ten months and the condition had improved with treatment administered by the veterinarian. The period of previous treatments according to the owner varied from 5 to 10 days. Based on the history and treatment records, the condition during the previous treatment periods was suggestive of pyoderma. The treatment was stopped by the owner when the condition improved. Examination of the dog revealed moist areas of skin with inflammation in the dorsal aspects of the body, suggestive of furunculosis. The lesions were poorly demarcated. Ventral aspect of the body revealed pustular lesions close to the prepuce. Closer examination of the coat revealed epidermal colarettes on the body. Interdigital cysts were present in both the forelegs. These cysts were of moderate size and were not painful when moderate pressure was applied. Deep and superficial skin scrapings were taken for laboratory investigation. Sterile swabs were collected for culture and sensitivity studies.

## Results and Discussion

Culture results revealed heavy growth of *Staphylococcus aureus* and beta hemolytic Streptococcus sp. The two organisms on sensitivity studies showed variance in the sensitivity pattern. Of the 21 antibacterials tested, *Streptococcus sp.* was sensitive to ampicillin, ampicillin-sulbactam, netilmycin, levofloxacin, lincomycin, linezolid, co-trimoxazole, cephalosporins and macrolides. The organism was resistant to tetracycline, amikacin, gentamicin and ciprofloxacin. *Staphylococcus aureus* was sensitive to tetracycline, gentamicin and linezolid. The organism was resistant to methicillin. No mites were detected in the deep skin scrapings. Superficial skin scrapings did not reveal the presence of spores or damage to hairs suggestive of dermatomycosis. Based on the clinical and laboratory findings, the case was diagnosed as deep pyoderma.

Considering the recurrent occurrence, antibacterial sensitivities, presence of two different organisms and ease of administration, the animal was treated with Tab. linezolid @ 10 mg per kg bwt. twice daily. Skin lesions started improving by 8-10 days and no clinical sign suggestive of an active lesion was found by 18 days post treatment. Treatment was continued for one week after the abatement of clinical signs. Chlorhexidine 2 per cent solution was carried out in areas amenable to application. The owner did not report any recurrence for a period of 8 months after treatment, the period for which contact was made with the owner.

Recurrent pyoderma and deep pyodermas can be frustrating for the owner and for the veterinarian. A strict schedule for treatment and a strict compliance with regard to administration of the drug at least one week after complete clinical recovery are two prerequisites for successful treatment. If recurrence is recorded,

several associated factors including other diseases need to be investigated. Use of suitable antibacterials, if required, based on culture and sensitivity is a must, so is the period of treatment. Linezolid, an oxazolidinone antibacterial, is effective in the treatment of serious infections associated with gram positive bacteria including methicillin resistant Staphylococci (Morris *et al.*, 2017) Dosages defined for dogs and cats is 10mg per kg IV, PO every 12 hours (Papich, 2013). Linezolid along with carbapenams and vancomycin are considered at the highest end of the spectrum of drugs considered as lifesaving and development of resistance to these antibacterials can be a cause of public health concern. There are variations in conclusions with regard to presence of resistant bacteria in small animal populations. Close proximity of people and pets can result in transfer of bacteria including drug resistant ones to humans (Pillai, 2011). Certain guidelines have been developed with regard to anti-bacterial use, resistance and small animal treatment (Hiller *et al.*, 2017 and Beco *et al.*, 2016). Development of a mandatory guideline for use of such antibacterials in veterinary treatment in our setting is of utmost importance.

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