

## Antibiogram of *Klebsiella* Sp. Isolated from Ascitic Fluid of Canine Infected with Pyometra

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### Abstract

Pyometra, a hormonally mediated diestral disorder is described by thickening of the uterine lining and accumulation of uterine secretions (cystic endometrial hyperplasia). These secretions leak out to the abdomen and form ascites, which provides an environment for bacterial growth. *E. coli* is the common organism that migrates from the vagina into the uterus and causes ascites. As a first report, a bacterium was isolated from such an ascitic fluid of a pyoderma-infected Rottweiler canine breed and further the organism was identified as *klebsiella sp.* based on biochemical tests. Antibiogram of *klebsiella sp.* revealed that the organism was sensitive to ciprofloxacin, erythromycin, tetracycline, ampicillin, amikacin and gentamycin and resistant to methicillin.

**Keywords:** Ascitic fluid; Pyometra; Rottweiler

### Introduction

Pyometra is an important deadly disease, which affects the fertility of female dogs. "Pyo" meaning pus and "metra" meaning uterus. Thus pyometra factually means pus-filled uterus. This condition is similar to appendicitis in humans. The major cause of pyometra is the hormonal changes in the reproductive tract. Following estrus cycle ("heat"), progesterone levels get elevated for eight to ten weeks and this thickens the lining of the uterus in preparation for pregnancy. If pregnancy does not happen for several subsequent oestrus cycles, the thickened lining forms a cyst (cystic endometrial hyperplasia) [1] and secretes fluid in which bacteria can infect and grow. The path of the bacteria is the opening of the cervix during estrus cycle. Once the bacteria enter, the cervix gets tightly closed, and forms a barrier between the uterus and the outside. Later the uterus ruptures and leaks out the pus into the abdomen, causing distended and enlarged abdomen, a condition known as ascites [2]. Since the bacteria cannot expel, bacterial toxins may enter the bloodstream (toxemia). As a result, dogs with "closed" pyometra and ascites can quickly become ill, developing breathing difficulty, cough, weakness and pale gums and finally the dog expires. *E. coli* is the common bacterium isolated from ascitic fluid, and this is the first report of isolating the *Klebsiella sp.* Very few reports explain the penetration of antibiotics into ascitic fluid [3]. In this study, an antibiogram test for *klebsiella sp.* was conducted and found that it was sensitive to ciprofloxacin, erythromycin, tetracycline, ampicillin, amikacin and gentamycin and resistant to methicillin.

### Materials and Methods

A Rottweiler female canine aged seven years was brought to a veterinary dispensary, Pudukkottai district, with a history of vomiting, loss of appetite, depression and increased drinking and urination. On clinical examination, the abdomen looked bloated and on tapping the abdomen produced a dull, flat noise indicating the case of ascites due to pyometra. Exudate fluid from ascites was collected by advancing a needle into the most pendulous area of the abdomen while keeping a slight negative pressure in the syringe [2]. The ascitic fluid was subjected to microbiological analysis. Fluid sample was streaked on 5% sheep blood agar and MacConkey agar plates and kept for aerobic incubation at 37°C for 24 hrs. Colonies from the plates were subsequently isolated and identified on the basis of morphology (Grams staining and capsule

staining) and standard biochemical analysis (Oxidase test, Indole, Methyl red, Voges-Proskauer, citrate, Triple sugar iron, Motility test and catalase tests) as described by Quinn et al. [4]. The organism was subjected to antibiotic susceptibility test on Muller-Hinton Agar (MHA) as described by Bauer et al. [5]. The efficiency of antibiotics was determined by measuring the diameter of the zone of inhibition around the discs.

### Results and Discussion

Pure growth of mucoid colonies in blood agar and pink colonies in MacConkey agar were observed after 24 hrs of incubation. Gram staining revealed that the organism was gram-negative and rod-shaped. Capsule staining confirmed the presence of a capsule which is also characteristic of *Klebsiella sp.* Biochemical analysis described that the organism was non-motile, oxidase-negative, catalase-positive and further IMViC test showed that the organism was indole-negative, Methyl red-negative, Voges-Proskauer-positive, citrate-positive and also in TSI, the organism exhibited an acidic slant and an acidic butt without H<sub>2</sub>S production. Thus based on these interpretations, the organism was identified as the opportunistic pathogen *Klebsiella sp.* Antibiogram results demonstrated that the organism was sensitive to ciprofloxacin, Erythromycin, tetracycline, ampicillin, amikacin and gentamycin and resistant to methicillin (Figure 1).

Although antimicrobial treatment is not the complete treatment for pyometra, this can reduce the severity of the infection that is spreading from the abdomen. So far *E. coli* has been isolated from canine pyometra exudate fluid and this study confirmed the presence of another opportunistic pathogen *klebsiella sp.* in ascitic fluid.

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**Figure 1:** Antibiogram of klebsiella species isolated ascitic fluid of rottweiler canine.

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