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UDK

Case report

POSTOPERATIVE WOUND INFECTION OF HARD PALATE WITH KLEBSIELLA PNEUMONIAE IN A DOG: CASE REPORT

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Abstract: Infection of wounds in dogs and cats with enterobacteria from the genus *Klebsiella* spp. are rare in clinical practice. A female, Bull Terrier was brought to the veterinary clinic "BL-vet" Banja Luka at the age of 8 months. According to the owner, the dog was operated in another clinic and a several weeks later they noticed an abundant nasal discharge. Clinical examination revealed that the general condition of the dog was unchanged. There was a noticeable abundant purulent discharge, light-green in color with food remains from the nostrils. In the oral cavity, a foul breath - *foetor ex ore* was registered. By examining the oral cavity, a fresh-infected wound on the hard palate was visible. The wound healing was difficult due to the present infection, leaving the edges of the palate wound unattached. Only after taking a swab of the bottom of the wound, it could be noticed that this was an active suppurative process. *Klebsiella pneumoniae*¹ was isolated from the wound of the dog's palate.

Keywords: *Klebsiella pneumoniae*, postoperative infection, dog

INTRODUCTION

Infection of dogs and cats with enterobacteria of the genus *Klebsiella* spp. are rare in daily clinic practice. Microbiological analysis of infected wounds in dogs revealed that the prevalence of *Klebsiella pneumoniae* is 1.7% (Urumova et al., 2012). A slightly higher number of *Klebsiella pneumoniae* isolate (16.7%) was established by Rahman et al. (2003). Enterobacteria are rarely isolated from bite wounds in dogs (Meyers et al., 2008). Enterobacteria, especially representatives of the genus *Klebsiella* spp. provoke significant problem in so-called „hospital or nosocomial“ infections (Glickman, 1981, Seliškar et al., 2007). Infection with

Klebsiella oxytoca has been described in two dogs after dental surgery, but infection in one of them was fatal since the dog entered in septic shock after extraction of the premolar tooth (Seliškar et al., 2007). Nosocomial infections with *Klebsiella* spp. are common in human medicine and are almost always associated with contaminated catheters and intrahospital faucets (Lowe et al., 2012).

This paper describes a hard palate infection in a dog with the enterobacterium *Klebsiella pneumoniae* after surgical repair of cleft hard palate.

CASE DESCRIPTION

An eight months old female Bull Terrier was brought to the Veterinary Clinic “BL-vet” Banja Luka. We found out, from anamnesis, that the several weeks before owner noticed a abundant discharge from the nose, the animal was operated in another veterinary clinic. As veterinarian recommended, the dog was fed with softer food after surgery.

Clinical examination revealed that the general condition of the dog was unchanged. An abundant light-green purulent discharge with

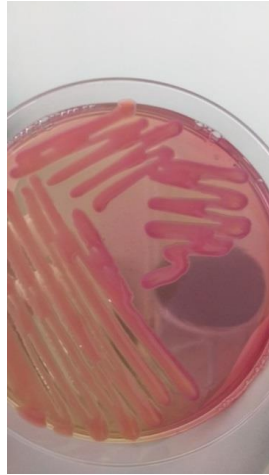
food remains was observed from the nostrils. There was strong smell from the oral cavity - *foetor ex ore*. Examination of oral cavity reveals a freshly infected wounds in the hard palate. The wound healing was difficult due to the present infection, leaving the edges of the palate wound unattached. The pus with the food residue was hard to notice only by inspecting the dog's oral cavity, since it was located at the bottom of the wounded palate. Only after taking the swab of the bottom of the wound it was possible to notice that there was an active purulent process.



Pictures 1 and 2. Postoperative infection with *Klebsiella*

Based on clinical examination and due to the presence of abundant purulent content, a decision to obtain a microbiological analyses of the bottom of the infected wound was made. The wound swab was seeded onto 5% sheep blood agar and *MacConkey* agar. After 24 hours, growth of characteristic gray, non-hemolytic, large and mucoid colonies was observed on the

blood plate. On *MacConkey* agar, lactose positive mucoid colonies were observed. By further primary identification (oxidase test, catalase test, Gram staining) of bacterial culture, it was determined that it belongs to one of the species from family *Enterobacteriaceae*. Given the specific growth on *MacConkey* agar – mucoid colonies with lactose positive bacteria – the *Klebsiella* genus was suspected.



Picture 3. Mucoïd colonies on *MacConkey* agar

After twenty four hours of incubation on neutral agar, pure culture was delivered for definitive identification at the Laboratory for Microbiology of the University Clinical Center in Banja Luka. Using the automatic system „*VITEK 2 Bi-omerieux*“ presence of enterobacterium *Klebsiella pneumoniae* has been confirmed. In addition, a sensitivity on selected antimicrobials was established on the system. The isolate was sensitive to cephalosporins (cefuroxime, cefixime, ceftria-xone, cefepime), aztreonam, doripenem, ertapenem, imipenem, meropenem, levofl-oxacin, moxifloxacin, tigecycline, chloramp-henicol, colistin, trimethoprimol and sulfamethoxazole/trimethoprim. Resistance has been demonstrated for ampicillin/sulbactam and piperacillin.

The dog was exposed to antimicrobial therapy, with 5mg/kg of fluoroquinolones (enrofloxacin) administrated parenterally for seven days. For next seven days, sulfonamides with trimethoprim in the dose of 1 ml per 10 kg was administered. Clinical signs (nasal discharge, purulent wound infection) reduced after therapy but were not completely absent. From information received from owners, we realized that the dog was exposed to surgery again at the veterinary clinic, but the wound could not be fully repaired, and thus was constantly exposed to new infections. Currently, dog is housed in Slovenia, purulent content is regularly aspirated from the wound and antimicrobial therapy is no longer being administrated.

DISCUSSION

The case of rare postoperative infection with the enterobacterium *Klebsiella pneumoniae*, which is rarely encountered in everyday clinical practice, is described in this paper. *Klebsiella* is a common finding of nosocomial infections in large hospital centers both in humans and animals, with significant antimicrobial resistance being found (Glickman, 1981, Johnson, 2002).

In veterinary practice, such cases are rare, because it was found in our isolate, based on obtained antibiogram, that a great number of antimicrobials are effective against *Klebsiella*.

In our case, infection was probably oral, since the wound in oral cavity was not able to be protected from environmental contamination. Also, it was proved that *Klebsiella pneumoniae*

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could be a normal microbial flora in the oral cavity of dogs (Kasempimolporn et al., 2003). However, as a significant opportunistic pathogen, this enterobacteria, in the case of septicemia, can provoke significant complications, including death (Roberts et al., 2002). In our case, the goal of antimicrobial therapy was to maximize the cure of the infection before re-surgical treatment, thereby minimizing the risk of reinfection and septicemia.

Postoperative reinfections are common in veterinary practice (Eugster et al., 2012), and

cannot be always considered as professional mistakes, as hospitalization and regular monitoring of patients in our clinics and ambulances are still rare. However, in the case of complicated infections that do not respond to empirical therapy, with pronounced clinical presentation and with abundant and atypical purulent content (green pus with odor, blood admixture etc), it should be sampled and sent for bacteriological examination. In such cases, therapy based on antibiogram is the only choice.

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