Aeromonas hydrophila isolation from Holland lop (*Oryctolagus cuniculus*) rabbits

Meriç Lütfi Avsever, Seza Eskiizmirliler, Serra Tunalıgil

Bornova Veterinary Control Institute, Bacteriology Laboratory, Izmir

Geliş Tarihi / Received: 25.03.2015, **Kabul Tarihi** / Accepted: 08.07.2015

Summary: Five dead Holland lop breed rabbits bought from a pet shop and reared in a garden were presented to our laboratory with diarrhea and mortality as symptoms. *Aeromonas hydrophila* was isolated from the internal organs and fecal samples of these rabbits and the case is presented.

Key words: *Aeromonas hydrophila*, Holland lop, *Oryctolagus cuniculus*, Rabbit

Hollanda lop (*Oryctolagus cuniculus*) tavşanlarından *Aeromonas hydrophila* izolasyonu

Özet: Bir pet shop'tan alınıp bahçe ortamında yetiştirilen beş ölü Holland lop türü tavşan ishal ve mortalite şikayetiyle laboratuvara getirildi. Bu tavşanların iç organlarından ve dışkılarından *Aeromonas hydrophila* izole edilmiş olup, bu olgular sunulmuştur.

Anahtar kelimeler: *Aeromonas hydrophila*, Holland lop, *Oryctolagus cuniculus*, Rabbit

Introduction

The rabbit breed named Holland Lop, Netherland Lop, or Dwarf Lop was declared by the Dutch government as a national breed in 1964. These rabbits are of a popular companion animal breed and also are used for show purposes. These animals have a significant place in the companion animal sector which is rapidly growing in Turkey. Their non-aggressive temperament, small and attractive physical properties and their aptitude to training make them a popular choice. As other rabbits, Holland lops are susceptible to *A. hydrophila* [1,7]. But still, natural *A. hydrophila* infections in Holland Lop rabbits were not commonly reported. The aim of this case presentation is to report a natural *A. hydrophila* infection in Holland lop rabbits and to draw attention to the significance of disease in rabbits.

Case presentation

Disease symptoms consisted of severe green-yellow diarrhea in 6- 8 week old rabbits, a failed treatment scheme against coccidiosis was performed and as a result 20 rabbits were dead within 3 weeks (Total mortality 20%). Five rabbits presented to the laboratory were examined bacteriologically. For this purpose, fecal samples were inoculated on Nutrient broth, Rappaport Vassiliadis Soy Broth and Muller-Kauffmann Tetrathionate Broth. From internal organs (liver, spleen, heart and lungs) inoculations were made on Blood Agar and McConkey Agar. Inoculated media were incubated in 37°C for 24 hours. Colonies on Blood and McConkey agar plates were subcultured while initial inoculations on liquid media were streaked on McConkey Agar and further subcultures were carried out.

Twelve isolates five from fecal samples and 7 from internal organs) were identified as *A. hydrophila* with conventional microbiological methods [3,4] and Vitek- 2 Compact identification device. Phenotypic characteristics of these isolates which showed growth on MacConkey agar were homologous and they were also found to be Gram negative, haemolytic, motile, oxidase positive, catalase positive, Voges-Preskauer positive and lactose negative.

Antibiotic susceptibility testing was performed with disc diffusion method and inhibition zones were measured and compared to reference values [2,6]. Florfenicol (30 µg), gentamycin (10 µg), lincomycin + spectinomycin (10 µg), enrofloxacin

Yazışma adresi / Correspondence: *Meriç Lütfi, Bornova Veteriner Kontrol Enstitüsü Bakteriyoloji Laboratuvarı, İzmir, Türkiye*
E-posta: lutfiavsever@gmail.com

(5 µg), ceftiofur (30 µg), colistin sulphate (10 µg), amoxycillin + clavulonic acid (30 µg), erythromycin (15 µg), oxytetracycline (30 µg), sulfamethoxazole-trimethoprim (25 µg) (Oxoid) were used in the disc diffusion test. The isolates were seen to be susceptible to ceftiofur and gentamycine. The figure showing the living conditions of rabbits is in Figure 1.

Figure 1. Holland Lop rabbits kept on a concrete floor covered with wood cuttings and dirt.

Vitek 2 compact can differentiate *A. hydrophila* from *Aeromonas sobria* perfectly, but cannot differentiate from *Aeromonas caviae*. This lack can be remedied with the conventional Voges-Preskauer (V-P) test. *A. hydrophila* is positive for V-P whereas *A. caviae* is negative. Besides, *A. caviae* is not haemolytic on blood agar [4,5,8].

Although rabbits are generally susceptible to *A. hydrophila* infections, the disease rarely escalates into a severe outbreak. Peniagua et al. [7], reported an outbreak caused by *A. hydrophila* in a rabbit farm in Spain. Researchers reported isolation of pure *A. hydrophila* cultures from the livers, lungs, spleens and heart blood samples of rabbits. Similarly, in this work, *A. hydrophila* was isolated as a pure culture from internal organs (liver, lungs, spleen and heart). Coliform group bacteria accompanied the isolations made from fecal samples.

Abdel Gwad and Abdel Rahman [1], in a previous study, aseptically took fecal swabs from 135 rabbits and as a result of bacteriological examinations isolated *A. hydrophila* at a rate of 24.4 % in rabbits with diarrhea and 1.5 % in healthy rabbits. In an experimental study with these isolates they reported a mortality rate of 20 % and re-isolated the agent from the internal organs of dead rabbits.

In the antibiotic susceptibility testing they [1] performed; they found the isolates to be susceptible to these antibiotics; gentamycine (100 %), nalidixic acid (100 %), chloramphenicol (95 %), cephoxetin (90 %). Isolates were also found to be resistant to penicillin and ampicillin. In this work, *A. hydrophila* was isolated from all 5 rabbits' fecal samples (100 %) but morbidity was found to be higher than that of Abdel Gwad and Abdel Rahman [1] 's report. However, extensive studies with more samples are needed for a definite conclusion. On the other hand, the mortality rate and antibiotic susceptibility patterns were found to similar to the findings reported by Abdel Gwad and Abdel Rahman [1].

References

1. **Abdel-GwadAM, Abdel-Rahman AA,** (2004). *Isolation and significance of Aeromonas hydrophila group in farmed rabbits. Assiut University B EnvironRes. 7 (1), 85-93.*
2. **Alderman DJ, Smith P,** (2001). *Development of draft protocols of Standard reference methods for antimicrobial agent susceptibility testing of bacteria associated with fish diseases. Aquaculture. 196, 211-243.*
3. **Arda M, Minbay A, Aydın N,** (1982). Özel Mikrobiyoloji, bakteriyel infeksiyöz hastalıklar, A.O. Basımevi, AU Veteriner Fakültesi, Yayın No. 386, Ankara.
4. **Forbes B, Sahm D, Weissfeld A,** (2002). *Bailey Scott's Diagnostic Microbiology. MosbyInc., St. Louis, MO, ed. 11. 423-433.*
5. **Janda JM, Abbott SL,** (2010).*The Genus Aeromonas: Taxonomy, Pathogenicity, and Infection. Clin MicrobiolRev. 23(1), 35-73.*
6. **National Committee for Clinical Laboratory Standards (NCCLS),** (2000). *Methods For Dilution Antimicrobial Susceptibility Tests For Bacteria That Grow Aerobically-Fifth Edition: Approved Standard M7-A5, Nccls, Wayne, Pa, Usa.*
7. **Paniagua C, Argüello-Villares JL, Arias MA, Herreros M,** (1998). *Aeromonas hydrophila associated with a severe outbreak of infection in farmed rabbits. Zentralbl Hyg Umweltmed. 201 (4-5), 423-30.*
8. **Parker JL, Shaw JG,** (2011). *Aeromonas spp. Clinical microbiology and disease. J Infect. 62 (2), 109-18.*