DOI: 10.22055/IVJ.2020.225021.2245
DOR: 20.1001.1.17356873.1401.18.4.1.5

Bacteriologic survey of hepatic and cardiac lesions in commercial poultry carcasses

Zoleikha Atabay[1], Seyed Mostafa Peighambari[2*], Seyed Ahmad Madani[3] and Azam Yazdani[4]

[1] DVM Graduated from Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran
[2] Professor, Department of Avian Diseases, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran
[3] Assistant Professor, Department of Animal and Poultry Health and Nutrition, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran
[4] MSc., Department of Avian Diseases, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran

Received: 05.04.2020 Accepted: 30.11.2020

Abstract

The aim of this study was to survey the infectious lesions of liver and heart of commercial poultry carcasses caused by bacteria, to assess the role and the rate of incidence of bacteria other than *E. coli* in development of liver and heart lesions in commercial poultry flocks, and to determine the antimicrobial sensitivity of the isolated bacteria. Samples were taken from heart blood and liver's visceral surface of 614 carcasses obtained from 150 flocks (including 118 broiler flocks, 14 laying flocks, 12 turkey flocks, 2 breeder flocks, 2 quail flocks and 2 partridge flocks) located in 18 provinces of Iran. The bacterial isolates were classified into genus and species based on microbiological standard methods. Out of 484 isolates, 382 (78.92%) *Escherichia coli*, 37 (7.64%) *Salmonella*, 18 (3.71%) *Proteus*, 17 (3.51%) *Staphylococcus aureus*, 9 (1.85%) *Streptococcus*, 7 (1.44%) *Pseudomonas aeruginosa*, 6 (1.23%) *Klebsiella*, 5 (1.03%) *Staphylococcus epidermidis* and 4 (0.71%) negative coagulase *Staphylococci* were detected while in 165 cases, no bacteria were found. *Salmonella* was detected in a young turkey flock (7-day old). Antimicrobial sensitivity test was performed for 100 *E. coli* isolates from broiler flocks, 2 *E. coli* isolates from quail flock and 30 *Salmonella* isolates. The resistance pattern of *E. coli* isolates included 56 patterns. The highest drug resistance was observed to doxycycline, flumequine, tetracycline and enrofloxacin. In 30 *salmonella* isolates, 17 resistance patterns were observed. The highest drug resistance was observed to ampicillin and nalidixic acid. All *Salmonella* isolates belonged to serogroup D. Results showed that *Escherichia coli* was the most common pathogen isolated from heart and liver lesions but other bacterial infections should also be noticed. Drug resistance patterns even in isolates of one farm may vary; therefore, performing antimicrobial sensitivity test is necessary prior to prescribing any antibacterial agent in a farm.

Keywords: *Escherichia coli*, *Salmonella*, Heart, Liver, Drug resistance

[*] **Corresponding Author**: Seyed Mostafa Peighambari, Professor, Department of Avian Diseases, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran
E-mail: mpeigham@ut.ac.ir

Refrences

Abdul-Aziz, T. (2020). Miscellaneous and Sporadic Bacterial Infections. In: Diseases of Poultry. Swayne, D.E., Boulianne, M., Logue, C.M., McDougald, L.R., Nair, V., Suarez, D.L. (eds.). (14th ed.) Wiley-Blackwell Publication. Ames, Iowa, USA. p. 1043-1085.

Andino, A. & Hanning, I. (2015). *Salmonella enterica*: survival, colonization, and virulence differences among serovars. *The Scientific World Journal, 520179*, 1-16.

Akbarian, R., Peighambari, S. M., Morshed, R., & Yazdani, A. (2012). Survey of *Salmonella* infection in Iranian poultry flocks. *Iranian Veterinary Journal, 8*, 5-10.

Blackall, P. J. & Hofacre, C. L. (2020). Fowl cholera. In: Diseases of Poultry. Swayne, D.E., Boulianne, M., Logue, C.M., McDougald, L.R., Nair, V., Suarez, D.L. (eds.) (14th ed) John Wiley & Sons, Inc., NJ, USA. p. 831-846.

Boulianne, M.; Uzal, F.A. and Opengart, K (2020). Clostridial Diseases. In: Diseases of Poultry. Swayne, D.E., Boulianne, M., Logue, C.M., McDougald, L.R., Nair, V., Suarez, D.L. (eds.) (14th ed) John Wiley & Sons, Inc., NJ, USA. p. 966-994.

Bisgaard, M., Bojesen, A. M., & Christensen, J. P. (2010). Observation on the incidence and aetiology of valvular endocarditis in broiler breeders and detection of a newly described taxon of *Pasteurellaceae, Avibacterium endocarditidis*. *Avian Pathology, 39*, 177-181.

Clinical and Laboratory Standards Institute (CLSI): Performance Standards for Antimicrobial Susceptibility Testing. M100-S16. 18th Informational Supplement. (2008). CLSI Press. Wayne, PA, USA.

Doulatyabi, S., Peighambari, S. M., & Morshed, R. (2017). Survey of *Salmonella* infections in broiler farms around Sanandaj. *Journal of Ilam University of Medical Sciences, 25*, 70-78.

Eram, N., Peighambari, S. M., & Yazdani, A. (2013). Study on *Salmonella* infection in broiler farms around Ghaemshahr: Determination of serotypes and drug resistance pattern of the *Salmonella* isolates. *Journal of Veterinary Laboratory Research, 5*, 85-93.

Gast, R. K. & Porter, Jr., R. E. (2020). *Salmonella* Infections, In Diseases of Poultry. Swayne, D.E., Boulianne, M., Logue, C. M., McDougald, L. R., Nair, V., Suarez, D. L. (eds.) (14th ed) John Wiley & Sons, Inc., NJ, USA. p. 719-753.

Mayahi, M., Talazadeh, F., Jafari, R. A. & Zamanian Keshavarz, V. (2017). Isolation of *Salmonella* from Iranian broiler breeder farms and feed. *Veterinary Clinical Pathology, 11*, 263-275.

Morshed, R. & Peighambari, S. M. (2010). Drug resistance, plasmid profile and random amplified polymorphic DNA analysis of Iranian isolates of *Salmonella* Enteritidis. *New Microbiologica, 33*, 47-56.

Nolan, L. K., Vaillancourt, J. P., Barbieri, N. L., & Logue, C. M. (2020). Colibacillosis. In: Diseases of Poultry. Swayne, D. E., Boulianne, M., Logue, C. M., McDougald, L. R., Nair, V., Suarez, D. L. (eds.) (14th ed) John Wiley & Sons, Inc., NJ, USA. p. 770-830.

Peighambari, S. M., Sorahi Nobar, M., & Morshed, R. (2015). Detection of *Salmonella enterica* serovar Infantis among serogroup C *Salmonella* isolates from poultry using PCR and determination of drug resistance patterns. *Iranian Veterinary Journal, 11*, 54-60.

Peighambari, S. M., Morshed, R., Baziar, M., Sharifi, A., & Sadrzadeh, A. (2018). Salmonellosis in broiler flocks of Golestan province: frequency, serogroups and antimicrobial resistance patterns of *Salmonella* isolates. *New Findings in Veterinary Microbiology, 2*, 72-81

Peighambari, S. M., Morshed, R., Shojadoost, B., Nikpiran, H., Haghbin Nazarpak, H., Khakpour, M., Faghih Nasiri, Z., Fallahdoost, M., Kachabi, S. H., Voshtani, R., Rohollahzade, H., & Yazdani, A. (2019)a. Survey of non-typhoid *Salmonella* infections among some broiler flocks of Mazandaran and Gilan provinces, 2010-2015. *Iranian Journal of Veterinary Clinical Sciences, 12*, 69-80.

Peighambari, S. M., Qorbaniun, E., Morshed, R., & Haghbin Nazarpak, H. (2019)b. A survey on *Salmonella* infection in broiler farms around Mashhad city: Determination of serogroups and antimicrobial resistance pattern of the *Salmonella* isolates. *Iranian Veterinary Journal, 15*, 34-43.

Rahmani, M., Peighambari, S. M., Svendsen, C. A. Cavaco, L. M. Agersø, Y., & Hendriksen, R. S. (2013). Molecular clonality and antimicrobial resistance in *Salmonella enterica* serovars Enteritidis and Infantis from broilers in three Northern regions of Iran. *BMC Veterinary Research, 9*, 66.

Schwarz, S., Kehrenbery, C., & Walsh, T. R. (2001). Use of antimicrobial agents in veterinary medicine and food animal production. *International Journal of Antimicrobial Agents*, *17*, 431-437.

Swayne, D. E., Boulianne, M., Logue, C. M., McDougald, L. R., Nair, V., Suarez, D. L. (2020). Diseases of Poultry (eds.) (14th ed) John Wiley & Sons, Inc., NJ, USA.

Waltman, W. D., Gast, R. K., & Mallinson, E. T. (1998). Salmonellosis. In: A Laboratory Manual for the Isolation and Identification of Avian Pathogens, 4th Ed; Swayne, D. E., Glisson, J. R., Jackwood, M. M., Pearson, J. E., & Read, W. M., American Association of Avian Pathologists, Pennsylvania, USA.