

INCIDENCE OF EGG BOUND SYNDROME IN CULLED COMMERCIAL LAYERS

M. Muthulakshmi, Susitha Rajkumar, R.S. Rajkumar and M. Muthukumar

National Research Center on Meat, PB No 19, Chengicherla, Boduppal PO.,
Hyderabad-500 092

Abstract: The objective of this study was to evaluate the incidence of egg bound syndrome in the year round culled commercial layers of Hyderabad region. The growth and automation of commercial egg production has developed faster and progressed further than any other type of livestock. Culling is an essential management practice to maintain the health of the flock and high egg production. Egg bound syndrome is one of the reason for culling. A total of 122 culled commercial layers were examined for prevalence of egg bound syndrome. All the birds were subjected to ante-mortem and postmortem examination at NRC on Meat slaughterhouse. During ante-mortem examination about 6% of layers were suspected for egg bound syndrome. The suspected bird's signs were noticed like distended abdomen with hardening on palpation (2%), fluffed feathers (1%), weakness (1%), difficult breathing (1%) and sitting fluffed on the bottom of the floor (1%). During post mortem examination, inflamed oviducts distended with egg and yolk mass were observed. Out of 122 layer birds examined, 8% of layers were observed with egg bound syndrome of which 2% have extended to egg peritonitis. From the above findings it was concluded that 8% of egg bound syndrome incidence in culled commercial layers of Hyderabad region.

Keywords: Culled layer hen, Egg bound syndrome, Incidence.

Introduction

The growth and automation of commercial egg production has developed faster and progressed further than any other type of livestock. Culling is an essential management practice to maintain the health of the flock and high egg production. Year round culling of the unproductive stock will fetch better profit. The healthy culled birds could be used as additional source of meat. Culling is based on physical characteristics which reflect the physiological characters related to egg production. In non-layers, wattle and comb are dry and hard, cold shrunken with white scabs, eye became dull and sleepy, small vent and abdomen also small usually less than two finger hand and more fat. The rate of culling varied from 2.90% (Mussawar *et al.* 2004) to 14.4% (Singh and Belsare 1994). Egg bound syndrome is one of the reason for culling. In egg bound syndrome a fully or partially formed egg is lodged in the shell gland or vagina, but can not be expelled by the bird at a normal rate. It is commonly noticed in pet birds (Worell, 1999) and broiler breeders (Eitan and Soller,

2009) resulting in life threatening symptoms and high mortality. Modern commercial layers are highly prolific and susceptible to egg bound syndrome, however it was rarely diagnosed and reported (Batra and Singh, 1978) and their etiological factors were not investigated in relation to their age and season wise occurrence. Therefore present study was planned to find out the prevalence of egg bound syndrome in Culled Commercial Layers of Hyderabad zone of India during the time of slaughter.

Materials and Methods

A total of 112 white leghorn year round culled layer hen obtained from a commercial poultry farm nearby Hyderabad were utilized in this study. Birds are culled at different ages during laying cycle. All the culled white leghorn hens were slaughtered hygienically as per the standard slaughter procedure at the slaughter unit of NRC on Meat, also subjected to ante-mortem and postmortem examination at slaughterhouse.

Results and Discussion

Commercial layers in India produce maximum of 350 eggs per hen house in following good management practices. Expulsion of the fully formed egg (oviposition) from the oviduct involves the muscular contraction of the uterus (shell gland) if there is any delay or defect in the mechanism leads to egg bound syndrome in poultry.

During ante-mortem examination about 6% of layers were suspected for egg bound syndrome. The suspected bird's signs were noticed like distended abdomen with hardening on palpation (2%), fluffed feathers (1%), weakness (1%), difficult breathing (1%) and sitting fluffed on the bottom of the floor (1%). Egg bound syndrome in commercial culled layer hens was diagnosed based on the presence of partially or fully formed egg in the oviduct especially in the shell gland or vagina on necropsy examination and laboratory investigation (personal observation). During post mortem examination, inflamed oviducts distended with egg and yolk mass were observed.

In the present study 8 % per cent of birds showed egg bound syndrome during post mortem examination which was in accordance with the results of Rahman and Samad (2003) who also observed in 8.28 per cent in layer chicken. However, Bhattacharjee et al. (1996) and Srinivasan et al. (2012) observed egg bound syndrome in dead birds 2.80 and 2.74 per cent respectively in layer chicken. The difference in the occurrence of egg bound syndrome was due to variation in the duration of the study, management and climatic condition. In which 2% have extended to egg peritonitis, Egg bound syndrome in salpingitis showed albumin

coated fully formed egg in the oviduct of culled white leghorn layers, Egg bound syndrome in hypocalcemia showed partially formed egg in the Uterus culled white leghorn layers.

Egg bound due to large sized egg was noticed in layers due to double yolked egg. The results are in consistent with Lewis et al. (1997) who also observed double yolked eggs during the start of a laying period and decreased as the birds mature. Ovulation normally occurs half an hour after oviposition. Lowry et al., 1979 said that over stimulated ovary in young layer leads simultaneous development and release of two follicles at a time. Abnormal size egg will stretch and possibly weaken uterine muscle leads to egg bound. In hens, the next day's egg enters the shell gland (uterus) 5 h after oviposition (Warren and Scott, 1935). In few birds two eggs in different state of formation at different region of oviduct or two eggs in one distended shell gland was noticed due to erratic ovulation (Robinson et al., 1991). Egg-bound cases associated with hypocalcemia revealed partially or fully formed eggs in the uterus or sometimes only egg membranes. A calcium deficient bird may produce eggs whose shells are softer or more fragile than normal and it is very difficult for a bird to lay a soft-shelled egg, since the muscles that push the egg out tend to deform the egg rather than moving it. The egg may be stuck near the cloaca, or further inside.

Excessive abdominal fat in vent region will reduce the elasticity of the oviduct and predispose to egg boundness (Brake and Thaxton, 1979). Injuries on the vent lead to inflammatory condition and pain can hinder egg laying (Kaikabo et al., 2007). Salpingitis might cause chronic irritation and hyperactivity of oviduct leading to production and deposition of albuminous exudate on the formed egg (Srinivasan et al., 2013). In uterine adenocarcinoma, the oviduct lumen was narrowed resulting in mechanical obstruction of egg movement leads to presence of two or more eggs in various stages of formation in the oviduct (Reynard and Savory, 1999).

Based on the above study, it may be concluded that 8% of egg bound syndrome of which 2% have extended to egg peritonitis in culled commercial layers of Hyderabad region. Among the various causes of egg bound syndrome, the noninfectious factors played a major role than infectious factors.

References

[1] Batra GL and Singh B (1978). A note on the incidence of reproductive disorders in domestic fowl in Punjab. *Indian Journal of Animal Sciences*, 48: 901-905.

- [2] Bhattacharjee PS, Kundu RL, Biswas PK, Mazumder JU, Hossain E and Miah AH (1996). A retrospective analysis of chicken diseases diagnosed at the Central Disease Investigation Laboratory, Dhaka. *Bangladesh Veterinary Journal*. 30: 105-113.
- [3] Brake J and Thaxton JP (1979). Physiological changes in caged layers during a forced molt. 2. Gross changes in organs. *Poultry Science*., 58: 707-716.
- [4] Eitan Y and Soller M (2009). Problem associated with broiler breeder entry into lay: a review and hypothesis. *World's Poultry Science Journal*, 65: 641-648.
- [5] Kaikabo AA Mustapha A Yaroro I and Gashua MM (2007). Occurrence of egg impaction and peritonitis in a flock of commercial laying hens in Damaturu Nigeria. *Nigerian Veterinary Journal*, 28: 56-58.
- [6] Lewis PD Perry GC Morris TR (1997). Effect of size and timing of photoperiod increase on age at first egg and subsequent performance of two breeds of laying hen. *British Poultry Science*. 38: 142-150.
- [7] Lowry DG Dobbs JG and Abplanap H (1979). Yolk deposition in eggs of a line selected for simultaneous multiple ovulations. *Poultry Science*, 58: 498-501
- [8] Mussawar, S., Durrani, T.M, Munir, K., Zahoor-ul-Haq Rahman M.T. and Sarbiland, K. 2004. Status of layer farms in Peshawar division, Pakistan. *Livestock Research for Rural Development* **16**: <http://www.lrrd.org/lrrd16/5/muss16032.htm>
- [9] Singh, V. P. and Belsare, V. P.1994. Performance of white leghorn birds under field conditions. *Poultry Advisor* 27: 43-46.
- [10] Rahman MA and Samad MA (2003). Pattern of occurrence of single and concurrent diseases associated with mortality in commercial chickens in Bangladesh. *Bangladesh Journal of Veterinary Medicine*. 1: 15-20.
- [11] Reynard MC and Savory CJ (1999). Stress induced oviposition delays in laying hens; Duration and consequences for egg shell quality. *British Poultry Science*. 40: 585-591.
- [12] Robinson FE Robinson NA and Scott TA (1991). Reproductive performance, growth and body composition of full-fed versus feed-restricted broiler breeder hens. *Canadian Journal of Animal Science*, 71: 549-556.
- [13] Srinivasan P Balasubramaniam GA Gopalakrishnamurthy TR and Balachandran P (2012 a) Pathology of oviduct in suboptimally producing commercial layer chicken. *International Journal of Poultry Science*, 11: 577-581.

- [14] Srinivasan P Balasubramaniam GA Gopalakrishnamurthy TR and Balachandran P (2013). Bacteriological and Pathological studies of egg peritonitis in commercial layer chicken in Namakkal area. *Asian Pacific Journal of Tropical Biomedicine*, 3: 988-994.
- [15] Warren DC and SCOTT HM (1935). The time factor in egg formation. *Poultry Science*, 14: 195–207.
- [16] Worell AB (1999). Egg binding in birds. *Exotic Pet Practice*. 4: 9-10.