



INCIDENCE PATTERN OF ASCITE SYNDROME AND RELATED LOSSES IN BROILER CHICKEN FARMS AT TABRIZ REGION, NORTHWEST OF IRAN

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ABSTRACT

The aim of this study was to estimation of ascite incidence rates and related mortality rate in regional farms (survey on 10 selected broiler farms). We had examined chicken carcass in clinic taken from 10 selected broiler farms. We had separated carcasses with ascite signs and asked some relative question to farm manager about farm capacity, location, and date of mortality onset, ascite incidence history at their farms, daily mortality rate, clinical signs and autopsy signs. At end of rearing period (finishing), weekly mortality and total mortality of each farm were estimated. Next, ascite-related mortality rate were determined according clinical images that have been taken from referred carcasses of these ten observed farms. In six farms, main reasons of ascite incidence were poor ventilation and hypoxia. Onset of ascite-related mortality is 4th week of age and it can be raised to 1.27% at 7th week of age (as peak point of mortality). Estimated mean total ascite-related mortality is 4.38% for farms located at northwest of Iran. Poor ventilation and in other side higher oxygen demands at second half of broiler rearing period are considered as main reasons of ascite incidence at regional farms.

Keywords: ascite syndrome, broiler, hypoxia, ventilation.

INTRODUCTION

Mortality incidence in a poultry farm is of immense importance to know the prevalence of diseases and for adopting preventive and control measures. Published information regarding mortality pattern of broilers and the causes under local condition of Tabriz city are limited. One of the common syndromes in broiler farms is ascite syndrome. Accumulation of non-inflammatory transudate in peritoneal cavities or peritoneal spaces is referred as ascites. Fluid commonly accumulates within two ventral hepatic, peritoneal or pericardial spaces and may contain protein clots (Aiello, 1998). Lower ambient temperatures trigger the incidence of ascites in broilers. The control of house temperature (particularly during brooding) could be extremely helpful in reducing ascites incidence (Aftab and Khan, 2005). Tabriz city with low temperature in autumn and winter are suitable locate for incidence of ascite in these seasons, specially at farms without constant temperature control programs. A conducted relative study at this region (Movassagh Ghazani *et al.*, 2009) concluded that unsuitable ventilation in broiler farms caused high incidence of ascite and subsequent lowering food conversion ratio at farms cited in Tabriz region. Researchers had suggested various factors as agents of ascite incidence; high altitude, rapid growth rate, limiting lung volume, energy rations and pelleted diets and poor ventilation, the presence of respiratory disease, high sodium and low dietary phosphorus levels; hepatotoxins, mycotoxins and furazolidone in the feed; vitamin E, selenium deficiencies and stress (Guo *et al.*, 2007). Studies on ascite epidemiology in India (Buragohain and Kalita, 2010) showed that ascites syndrome (34.3%) is the main

cause of mortality, significantly more than colibacillosis, yolk sac infection with omphalitis or caecal coccidiosis. Also, losses up to 30% have been reported in some American fast growing - flocks suffering from ascites (Lopez *et al.*, 1982). Because of lack of information about of ascite importance in broiler farms in the region, the aim of this study was to evaluation of ascite incidence rates and related mortality rate in regional farms (survey on 10 selected broiler farms).

MATERIAL AND METHODS

This study was conducted at veterinary clinics of Islamic Azad University. During 10 months study we had examined chicken carcass in clinic taken from 10 selected broiler farms. We had separated carcasses with ascite signs and we asked some relative question to farm manager about farm capacity, location, and date of mortality onset, ascite incidence history at their farms, daily mortality rate, clinical signs and autopsy signs. Collected information has been edited, categorized, to end of rearing period for all of selected farms. At end of rearing period (finishing), weekly mortality and total mortality of each farm were estimated. Next, ascite-related mortality rate were determined according clinical images that have been taken from referred carcasses of these ten observed farms.

RESULTS AND DISCUSSIONS

Based on evaluations on ten farms with different capacity and ascite-incidence records, main reasons of ascite incidence were poor ventilation and hypoxia for six farms, toxicity with antibiotic (furazolidone) for three farms and nutritional changes (such as supplementation of high levels of vegetable oil) for one farm.



Weekly incidence rate of ascite-related mortality (%) at ten selected regional farms up to 8th week of age are presented as Table-1.

Table-1. Ascite-related mortality percent in ten selected farms up to end of rearing period, at Tabriz region, northwest of Iran.

| Farm No. | 1 st week | 2 nd week | 3 rd week | 4 th week | 5 th week | 6 th week | 7 th week | 8 th week | Total up to end |
|----------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------|
| 1 | - | - | - | - | - | 2.00 | 1.96 | 1.92 | 5.88 |
| 2 | - | - | - | 2.47 | 2.10 | 0.74 | 0.59 | 0.51 | 6.41 |
| 3 | - | - | - | - | - | 0.70 | 0.78 | 1.06 | 2.54 |
| 4 | - | - | - | - | 0.84 | 0.77 | 0.91 | 0.97 | 3.51 |
| 5 | - | - | - | - | 2.45 | 2.73 | 2.80 | 2.75 | 10.72 |
| 6 | - | - | - | - | - | 1.20 | 1.46 | 1.51 | 4.17 |
| 7 | - | - | - | 0.80 | 0.88 | 1.02 | 1.08 | 1.04 | 4.82 |
| 8 | - | - | - | - | - | 0.60 | 0.54 | 0.33 | 1.47 |
| 9 | - | - | - | - | - | 0.57 | 0.48 | 0.34 | 1.41 |
| 10 | - | - | - | - | 1.47 | 1.40 | 1.08 | 0.93 | 4.88 |
| Mean | 0 | 0 | 0 | 0.327 | 0.774 | 1.173 | 1.268 | 1.136 | 4.381 |

The acute ascite syndrome and related mortality was started from 4th week of broiler age and had increasing trend to 7th week of age that peak ascite-related mortality was occurred at 7th week of age (Figure-1).

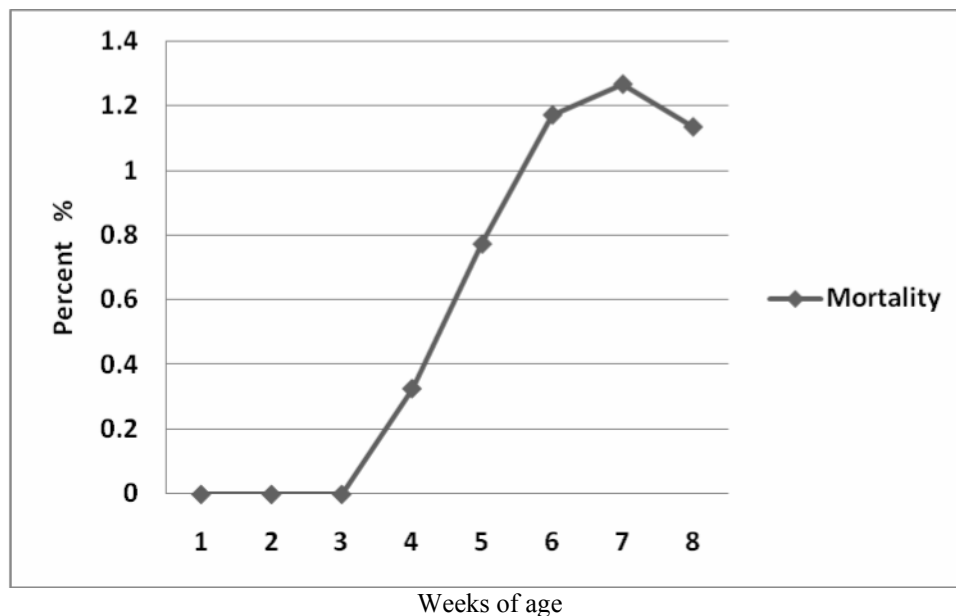


Figure-1. Ascite-related mortality pattern of broiler in ten selected farms up to 8th week of age, based on mean weekly mortality percentage.

Broiler chickens after 3rd week of age are susceptible for ascite syndrome that feed restriction at last half of rearing period can be suggested as an ascite-prevention method (Olkowski *et al.*, 1999). Birds that have a higher potential for growth rate under normal temperature conditions are more likely to suffer from ascites under cold-stress conditions as compared to birds with a lower potential for growth rate (Deeb and Cahaner,

2002), that it can be a susceptibility of broilers for ascite in Tabriz region (cold climate). An epidemiological study at Canada during 1986-1994 had showed a steady increase in ascites condemnation during this period and recorded nearly six-fold increase in condemnations due to ascites from 1986 to 1994 (Olkowski *et al.*, 1996). Our investigations at ten selected farms of Tabriz region had showed 4.381% mean ascite-related mortality in regional



farms (Table-1) that is considerably less than Buragohain and Kalita, (2010) survey in Mozoram region of India. Similarity between present study and Buragohain and Kalita, (2010) reports is ascite onset time (3rd week of age) in both studies but peak of ascite-related mortality incidence is different in their study. The 7th week of broiler age as a most susceptible period for ascite incidence according present observation (Figure-1) didn't has significant ascite-related mortality at Mizoram farms, India.

With attention to Table-1 and Figure-1, it seem that with crowding and limitation of space for birds and poor ventilation as an main induction factor (Movassagh Ghazani *et al.*, 2009), occurred hypoxia can make susceptible condition specially for fast-growing strains (Hassanzadeh, 2009). Poor ventilation caused less oxygen availability and more carbon dioxide concentration in farm space (is a main reason of ascite incidence in present survey, has been documented by Movassagh Ghazani *et al.*, (2009) especially at Tabriz region. Hypoxia as a key factor for ascite incidence has been cleared (Julian, 2000) and in our observations in regional farms (and stated by farm managers) is key agent of ascite and relative losses, too. The furazolidine toxicity and oil supplementation are two other factors in relation to ascite incidence at regions farms. Furazolidine-induced ascite are according to Reed and Vleet (1988) could be observed at three farms. In these farms, overdose addition of this drug caused furazolidine-toxicity and secondary ascite (as a side-effect). Dietary oil (as an ascite induced factor in one farm) because palatability of ration and high feed intake and subsequent demands for higher amounts of oxygen may cause hypoxia and ascite (Olkowski *et al.*, 1999; Ocak, 2006).

Based on present survey, it was concluded that onset of ascite-related mortality is 3rd week of age and it can be raised to 1.268% at 7th week of age (as peak point of mortality). Estimated mean total ascite-related mortality is 4.381% for farms located at northwestern Iran. Poor ventilation and in other side higher oxygen demands at second half of broiler rearing period are considered as main reasons of ascite incidence at regional farms.

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