Let's talk Chicken

With

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Coping with Flip over and Ascites: Challenges in modern day broilers

Towards the end of the last century poultry production has begun to take a huge commercial turn and the steady achievements in genetic research, developments in nutrition and interventions in management have played an enormous role to make poultry to be one of the most successful livestock ventures of today.

About 40 years ago a broiler bird took about 4.5 Kg of feed and gained a weight of 1 Kg in 49 days. Now it takes only 35-38 days to weigh more than 2 Kg, thanks mainly to successful research in genetic selection and improvement and better understanding of poultry nutrition.

Explosive growth and excellent feed efficiency, culminating in to superior performance of modern broiler, come along with their own problems. The fact is that as broilers grow too fast their internal organs such as heart, lungs, liver etc quite often fail to keep up with and they are barely capable of providing enough oxygen to sustain the body. Even the birds' bones and joints can not also keep pace with this fast and accelerated growth.

Let us discuss two most important health breakdowns and what we can do to avoid or reduce their occurrences.

- Flip-over or acute (or sudden) death syndrome:

This condition occurs in broilers usually during 4-6 weeks of age. As the name indicates, healthy looking broilers flip over with a squawking sound and die suddenly with a short spurt of wing-flapping just before dying. The birds with Ascites may pant, even in cool weather, and their combs may turn blue slightly. The dead birds are often found lying on their backs with their legs stretched out and their necks extended forward.

Even though there is no specific single reason put forth for this condition, it has been recognized scientifically as pulmonary hypertension syndrome.

Pulmonary hypertension happens when the heart fails to push sufficient blood through the lungs (pulmonary), as a result the blood pressure shoots up causing hypertension. Fast growing birds need more oxygen due to their faster metabolic rate. The male birds are more prone because they grow at a faster rate. The birds grow faster consuming large quantities of feed and have an extremely high demand for oxygen. When there is an increased demand for oxygen, the right side of heart pushes harder the

blood through lungs in order to increase the oxygen availability for the birds' increased metabolism. The fact is that since the size and volume of lung and cardiovascular system within the lung are fixed, the lung after a while fails to accommodate any more blood being supplied by the heart. This is the starting point for heart failure (congestive heart disease) manifested acutely by 'flip-over' and chronically by 'Ascites'.

- Ascites:

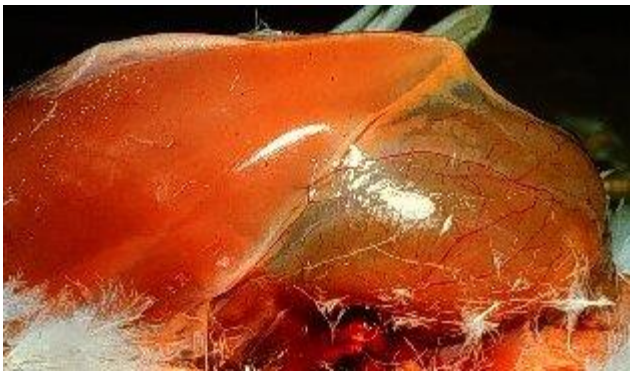
In a simpler term, Ascites, also known as 'water belly' where in, bird's heart may fail trying to pump blood to a fast growing body. The failing heart enlarges in the process and a straw coloured fluid fills up the abdomen and lungs; this fluid build up is called Ascites. That means flip over and Ascites are metabolic disease conditions and both of them may stem from the same cause.

Ascites has been reported firstly in high altitudes. This condition therefore was also called 'high altitude disease'. In areas of high altitude, the oxygen content in atmosphere found to be low coupled with low air temperature cause chronic hypoxia (reduced oxygen levels) resulting in pulmonary hypertension, as explained earlier.

But, presently, Ascites is common in the birds reared elsewhere even at sea levels. During winter months it is more pronounced as, the colder the environment is, the less the oxygen availability will be. And chicken farmers focus more to maintain temperatures at the cost of ventilation during winter brooding!

What is then the problem? Logically, what is happening to broilers in the first place?

The ultimate condition, as mentioned earlier, is pulmonary hypertension. The oxygen in the air for chicks to inhale is not sufficient or mixed with dust created by too dry litter or toxic gases as in the case of charcoal brooding or dirty environment. High levels of ammonia because of poor litter management, carbon dioxide or carbon monoxide especially due to charcoal brooding as a result, can deplete the oxygen in birds' immediate surroundings. If the concentration of toxic gases is excessive they may also damage the lining of respiratory system and inhibit the lung's ability to absorb sufficient oxygen. Another factor is, when the birds inhale dust with bacteria (organic dust, if you like!) from their immediate atmosphere (most of the Gram-negative bacteria such as E. coli, Salmonella sp., Campylobacter etc present more in those broiler rearing facilities that are not sanitized properly), the Lipo-Poly-Saccharide (LPS) layer in these organisms is found to cause pulmonary vasoconstriction that leads to pulmonary hypertension or Ascites. Brooder pneumonia caused by molds will also expose the birds to Ascites. High stocking density is another contributory factor for this condition. The fact is that one or all of these factors tend to create deficit in oxygen levels available for broilers. To add oil into the frying pan, it is true that the increased metabolic rate in a fast growing broiler will put the birds wanting for increased oxygen, as explained earlier!



Ascites with fluid accumulation in the body cavity

Dark red coloured breast muscle (in Ascites)- above and normal breast muscle from a normal broiler- below.

Courtesy for pictures on Ascites: Alberta, Canada>Agriculture and Rural development.

Apart from interfering with the faster growth which cannot be justified economically, what can we do to reduce the mortality from flip-over or Ascites? Can we do anything? Yes, we can do a lot!

All this boils down to the fact that from a management point of view we need to have quality air made available to birds through correct air flow or cross aeration/ventilation .

In our context , quite a number of farmers do charcoal brooding. It is unavoidable most of the time since gas brooding or electrical brooding is not consistent due to its nonavailability, black outs or being more expensive.

Charcoal , while burning and in a less intensity later in the brooder house, emits carbon dioxide and carbon monoxide which are toxic and do damage the inner lining of respiratory tract while inhaling them. When this happens chicken's respiration is affected, they do not get sufficient good quality oxygen. While charcoal brooding is carried out, two of most important things we need to strictly follow are:

- Open slightly the upper portion of curtain in brooder house to help the toxic gases escape.
- Please make sure that charcoal in the brazier (mbaula) is burnt completely outside the brooder house before it is brought in.
- Please make sure that the optimum temperature is maintained all the time, day and night.

More and more genetic improvement to get faster growth in broilers in the past is blamed to be one factor. Recently, by specific genetic selection and improvement some modern strains are found to be resistant to Ascites .

In the case of Ascites caused by microorganisms, recent studies investigating the effect of feed supplementation with acidifiers have shown promising results. Of course, optimal management practices are most important for reducing the problem of Ascites and maximizing the performance of broilers.

Please observe the chicks whether they are drinking, eating, resting, interacting and softly chirping. If the birds are found to deviate from all these normal functions then the temperature/ventilation must be adjusted. The birds sitting close to the floor with their heads kept low or huddled together indicate that they are feeling cold.

Concluding, a few take away messages in order to avoid the predisposing factors to Ascites :

- In the hatchery, ventilation should be normal in order to minimize carbon dioxide build up.
- Ensure that Chick holding room-temperature should be about 23°C with a relative humidity of 65-70%
- Please see that while transporting chicks the temperature in the boxes of 32°C with air temperature of 24°C for plastic boxes and 20°C for cardboard boxes in the chick transport vehicle .
- While brooding, provision of clean fresh air is of paramount importance to avoid flip over or Ascites later.
- Take all precautions while brooding using charcoal.
- Avoid overstocking of birds.
- Keep brooding temperature at optimum. Preheat of brooding area before the chicks are placed (minimum 8 hrs before the arrival of chicks). Keep litter temperature optimum to make chicks comfortable. Avoiding cold stress during brooding will go a long way to avoid Ascites later.
- Reduce the levels of carbon monoxide and ammonia by proper management.
- Avoid disturbance to the birds as much as possible. Avoid any sudden noise or movement in the chicken run.
- Keep low intensity light in the run as much as possible in order to avoid any stress due to excitement. The place has to be bright enough so that they get feed and water all the time.

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