

ASCITES “WATER BELLY” OF BACKYARD POULTRY

INTRODUCTION

Water belly, medically known as ascites, is a potentially serious condition in a hen. Ascites occurs when fluid inappropriately accumulates within the coelomic cavity of a hen. To better understand and thus manage this condition appropriately, we must first review a hen’s anatomy.

Anatomy

Although many organs are similar between hens and mammals, there are quite a few differences and wholly unique features to birds. Mammals have their internal body divided into the two major compartments, the thorax and the abdomen, which are separated by the diaphragm and different layers of connective tissue. The connective tissue lining the abdominal cavity is known as the peritoneal membrane. The inner body wall of the abdomen and the organs in the abdomen are lined in this peritoneal membrane. The space between the peritoneal membrane of the organs and that of the body wall is called the peritoneal cavity. This cavity typically has nothing within it.

Birds have no diaphragm to separate the thoracic and abdominal contents, unlike mammals, but they do have the connective tissue membranes, and a lot more of them! As a generalization, these are called coelomic membranes. One of these membranes is the intestinal peritoneal membrane.

Another unique anatomical feature that is present in birds is the presence of air sacs. Air sacs are membranes that branch off of the lungs and are present within the body cavity from the neck down to the intestines. Even though these air sacs don’t participate in gas exchange, movement through them aids in how air flows through and gas exchange occur in the lungs. These air sacs are thin walled and can change in size based on other structures around them. This will become important to understand when we later discuss clinical signs an individual may see with ascites.



Ascites: What Is It and How Does It Happen?

Ascites is when fluid accumulates within the potential space we discussed earlier, known as the peritoneal cavity. In normal situations, there really should be no fluid in this space, however certain diseases may allow this to occur. There are many diseases that can cause this to happen, but there are four basic pathophysiologic mechanisms of how it occurs.

Decreased Osmotic Pressure

The first pathophysiologic mechanism bringing about ascites is decreased osmotic pressure. The process of osmosis governs the flow of fluids across a membrane. Large particles on one side of a membrane cause fluid to want to stay on that side of the membrane with them. If there is a reduction in the numbers of this large particle, fluid will travel, or leak, to the other side of the membrane. In the case of blood vessel membranes, there is a protein called albumin that acts as this large particle. Albumin is necessary to help maintain fluid appropriately within blood vessels. If there is not enough albumin, fluid can leak out of the blood vessels. Aliments like liver disease, or gastrointestinal disorders can precipitate lower levels of albumin in the blood, thus resulting in fluid accumulation within the intestinal peritoneal cavity.



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Increase in Hydrostatic Pressure

The second disease process causing ascites is an increase in hydrostatic pressure. Hydrostatic pressure is something we think about when we discuss fluids running through a tubing system. The volume of fluid within a tubing system contributes to the pressure within that system. The greater the amount of fluid, the higher the pressure within the system. We can think about the heart and blood vessels as essentially a system of tubing with the fluid that is running through it being blood. In various forms of heart disease blood may not be pumped around the body effectively, leading to pressure changes within vessels which can cause an increase in pressure within veins. This increased pressure then results in fluid leaking out of the blood vessels and thus accumulating within the body cavities or within organs.

Vasculitis

The third way ascites develops is by a process called vasculitis. Vasculitis is an inflammatory condition of the vessels that occurs due to many underlying issues. This inflammation weakens the junctions between the cells that line the blood vessels thus causing fluid to leak from the vascular space.

Underlying disease processes that can cause this inflammation include infectious diseases, local irritants and other problems. There are various reproductive problems that can lead to vasculitis including egg yolk coelomitis (aka egg yolk peritonitis), an impacted oviduct, cystic ovarian disease, and reproductive tract cancers.

Impaired Lymphatic Drainage

The fourth, and final, pathologic process that leads to ascites is impaired lymphatic drainage. The lymphatic system is involved in helping fluids that are in tissues to be taken up and put back into the vascular system. This system is more highly developed in mammals but it is still present to a lesser degree in birds. Ducks and geese have this system more developed than most other birds.

Ascites, also known as “water belly,” can develop as a result of all of the above-mentioned routes. A hen may show no clinical signs at all if only a small amount of fluid accumulates. However, if a larger amount of fluid collects in their coelom, pressure will be placed on her abdominal organs, leading to compression of her air sacs in the caudal end of her body. Clinical signs seen with this include respiratory distress, open mouth breathing, panting, and exercise intolerance. Sometimes clinical signs can be vague, like her being less vocal, sleeping more or not eating as much as before. It may also be noted that her hind end, or belly area is rounded, or seems more full. Sometimes it may be noticed that the feathers around the vent are dirty or soiled with feces and a hen may or may not try to lay during this time.



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What Should Be Done If I Suspect Ascites?

If you feel that your hen has an overly round hind end, it is very important that you do not try to treat her yourself without knowing why. It is entirely possible that her rounded rear end is ascites, but it could also be any number of other conditions as well. Masses in the coelomic cavity, an enlarged organ, or an increased accumulation of fat can all feel very similar, even to someone that feels chicken coeloms every day! It is imperative that your hen sees a veterinarian for a thorough physical exam and some testing to see if this is truly present.

Your veterinarian will most likely need to do a few different tests to evaluate your hen. Coelomic ultrasound is a very quick test that allows the veterinarian to immediately tell if there is any excess fluid present. And if so, it enables the veterinarian to precisely determine the location for fluid drainage as well. Sometimes this test also allows the veterinarian to tell the cause of the ascites but sometimes it does not. Another test the veterinarian may want to do to diagnose ascites is a coelomic aspiration. This is when a needle is placed into the abdomen to see if fluid can be drawn out, and if so, ascites is present.

The dilemma now occurs here because each individual owner will need to decide the next steps. Is my hen a food/production animal that is a part of my farm or is she a pet? If she is a production animal, the ethical implications of keeping this bird in production need serious consideration. Once this condition is diagnosed, in order to treat it appropriately, you **MUST** find out why it is happening. This facilitates obtaining highly targeted, suitable, and efficacious treatments and care. You should be aware that this can become expensive quickly. Your bird may need blood work, cultures, cardiac ultrasounds (echocardiograms), and even exploratory surgery to figure out the cause of your bird's problem. Diagnostic testing may not be practical if your bird is considered a production animal, and many of the causes of ascites do not have good long-term outcomes. Treatment options are available for some causes, but unfortunately, the harsh reality is that many of the causes of ascites are not ultimately curable. You may be prolonging the inevitable, and humane euthanasia may be the next kind step for your hen.

If your hen is a pet, you may want to work with your veterinarian and do some of the previously mentioned diagnostics. Once the cause for ascites is determined, treatment options need to be discussed. In many chickens, the main cause of ascites is a reproductive disorder. Many people think the only cause of ascites is egg yolk coelomitis (egg yolk peritonitis) but this is simply not the case. As we learn more about avian medicine and perform more diagnostics, we are finding that there are many other forms of reproductive tract pathology causing ascites. Reproductive tract cancer is more common than once thought and a very frequent cause of ascites in chickens.

How Might the Problem Be Treated

Once your veterinarian determines the cause of the ascites, they will decide which treatments need to be done to best treat your bird. If your hen happens to have liver disease causing ascites then liver support medications may be the next step. If your bird has heart disease, then heart medications are in order. If it is determined that your hen has egg yolk coelomitis, then anti-inflammatories and possibly antibiotics may be needed. If your bird has cancer then you will need to discuss what is best for your individual pet with your veterinarian. If your bird has an impacted oviduct, then a salpingohysterectomy (surgical removal of the reproductive tract) will likely be discussed.

Although the ultimate and final treatment may vary, one treatment that all forms of ascites will have in common is the need to have fluid drained from the belly. This treatment often gives your bird some immediate relief and if your bird is lucky and it is a simple case of egg yolk coelomitis, one draining may be all that is required.

Contrary to what is commonly thought, egg yolk coelomitis does not have to be a death sentence, and doesn't always recur if the cause is diagnosed and treated. In actuality, the assumption in the past has been that all causes of ascites were from egg yolk coelomitis which, as discussed above, is simply not the case. Yes, many causes of ascites will be recurrent issues (for example liver disease, heart disease, reproductive tract cancers, cysts), but egg yolk coelomitis does not necessarily cause repeated fluid accumulation. Most of the time, if ascites recurs in a case of egg yolk coelomitis, there is another issue present contributing to it. This is something important to consider if the ascites continues to recur in your hen.

Owners often ask the veterinarian if they can drain their bird's belly of fluid at home. While there may be situations where your veterinarian could consider it, in most cases it will not be an option. Not only does this procedure need to be sterile, but it also needs to be done in the correct location. If the wrong location is poked with a needle, painful, or even fatal problems could occur. People can find videos online of owners putting needles into their birds' caudal coelom and letting them walk around to drain the fluid on their own. Although this is something people may do it is **HIGHLY** inappropriate and inhumane. The insertion of the needle creates an opening in the body that can introduce bacteria, potentially leading to severe infection. This can further deteriorate your bird's health and expedite its decline. Another problem with this method is that as the fluid drains, the needle will start to scrape against the internal organs. Not only could this lead to lacerations, bleeding, and organ damage, it is also highly uncomfortable. Please contact your veterinarian if you want to treat your bird or consider humane euthanasia or culling.

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What Can You Expect Next?

Ultimately, most of the diseases that cause ascites can become chronic and require life-long management or medications. Sometimes you may get lucky and with a one-time occurrence. Working with your veterinarian can help determine the cause and best treatment approach. Please remember, it is ok not to treat the problem, but please don't let your hen suffer.

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For More Information

For more information on birds, ask your veterinarian for copies of the following AAV Client Education Brochures:

- Avian Chlamydiosis and Psittacosis
- Veterinary Care for Your Pet Bird
- Basic Care for Companion Birds
- Behavior: Normal and Abnormal
- Caring for Backyard Chickens
- Caring for Ducks
- Digital Scales
- Feather Loss
- Feeding Birds
- Foraging for Parrots
- Injury Prevention and Emergency Care
- Managing Chronic Egg-laying in Your Pet Bird
- Signs of Illness in Companion Birds
- Ultraviolet Lighting for Companion Birds
- When Should I Take My Bird to a Veterinarian?
- Zoonotic Diseases in Backyard Poultry

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