

Ascites Water belly

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² and Al Dam²

Ascites or “water belly” is a metabolic disease of fast growing broiler chickens. It is occasionally seen in commercial turkeys. It is not an infectious disease even though mortality on a farm may be high.

Status in Canada

Ascites is one of the most common and economically important diseases of commercial and back yard broiler chickens. It causes significant losses both during the growing period and via condemnations at processing.

Cause

Ascites is a disease associated with rapid growth in a bird with limited cardio-respiratory capacity resulting in insufficient oxygen reaching the tissues.

Broiler chickens grow extremely rapidly and have been heavily selected for large muscle mass. Because they grow so quickly, their limited lung capacity has difficulty in maintaining blood oxygen levels necessary to meet this rapid growth. In order to maximize the amount of oxygen reaching the growing muscles, the number of circulating red blood cells that carry oxygen increase dramatically in the circulation, a process called polycythemia.

The increased number of circulating red blood cells makes the blood thicker and more viscous than normal and it has more difficulty passing through the small capillaries (blood vessels) of the lung. This results in high blood pressure or pulmonary hypertension. The right side of the heart that pumps this blood now has an increased workload and eventually it cannot handle the increased pressure. The right side of the heart dilates and the heart function becomes impaired.



Blood backs up in the liver and eventually fluid leaks through the liver capsule and into the space around the liver and into the abdominal cavity. This fluid accumulation is termed ascites.

Any condition that increases the birds requirement for oxygen will predispose the modern broiler chicken strains to ascites. For example, raising birds in high altitude areas with less oxygen may trigger the disease. Ascites has been reported often from commercial broiler operations in South and Central America where farms may be located in mountainous areas. Cold temperature significantly increases a birds requirement for oxygen, so birds raised without supplementary heat (for example in old bank barns or back yard pens) may develop ascites.

Pathology

Birds with ascites are generally smaller than normal. Their abdomen is distended and contains fluid (see figure 1). If the abdomen is opened the fluid may be clear and liquid or yellowish and gelatinous (see figure 2).

Figure 1 (BELOW): All 3 broilers in the photo have distended abdomens that if opened would contain fluid (hence the term water belly).

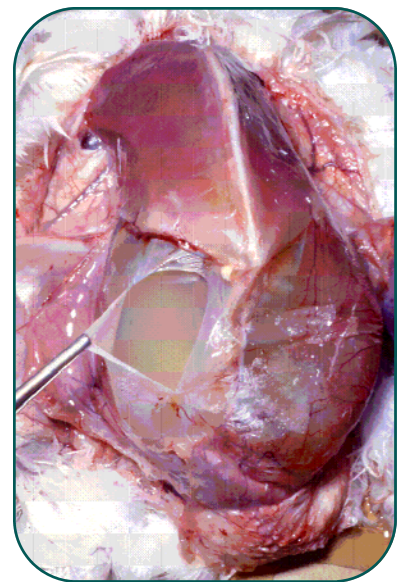


Figure 2 (ABOVE): A broiler chicken that has died of ascites and has the abdominal cavity opened.

Note the yellowish, gelatinous fluid.

There is often fluid in the pericardial sac (the sac surrounding the heart). The right side of the heart becomes markedly dilated and the bird eventually dies from heart failure (see figures 3 and 4).

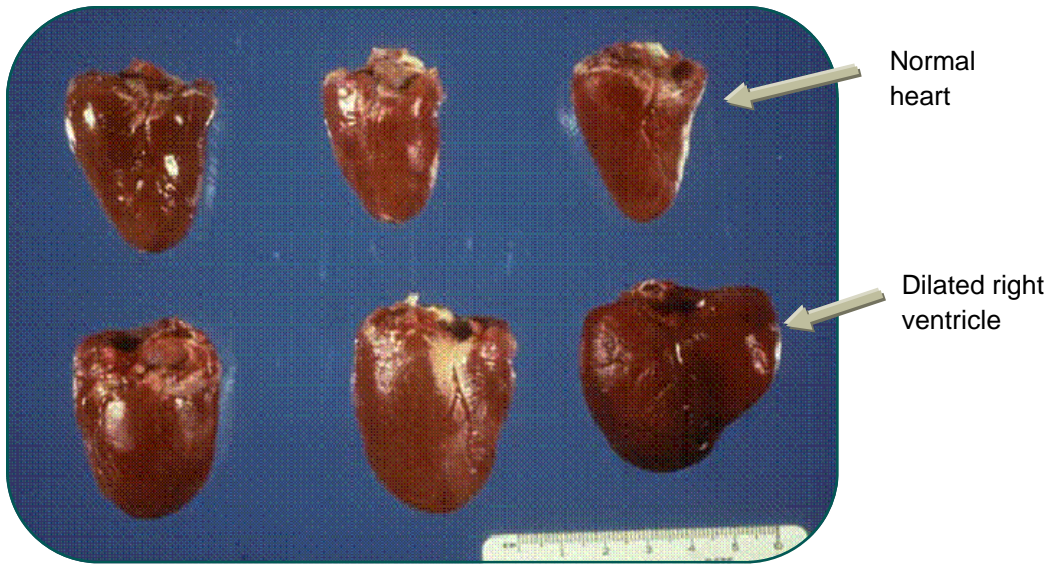


Figure 3: This photo shows a series of 6 broiler chicken hearts, each with varying degrees of heart failure. Starting at the top right (a relatively normal, cone-shaped heart) and moving counter clockwise, each heart becomes larger and more rounded. The right ventricle becomes more and more dilated (see arrow) until the heart can no longer function normally.

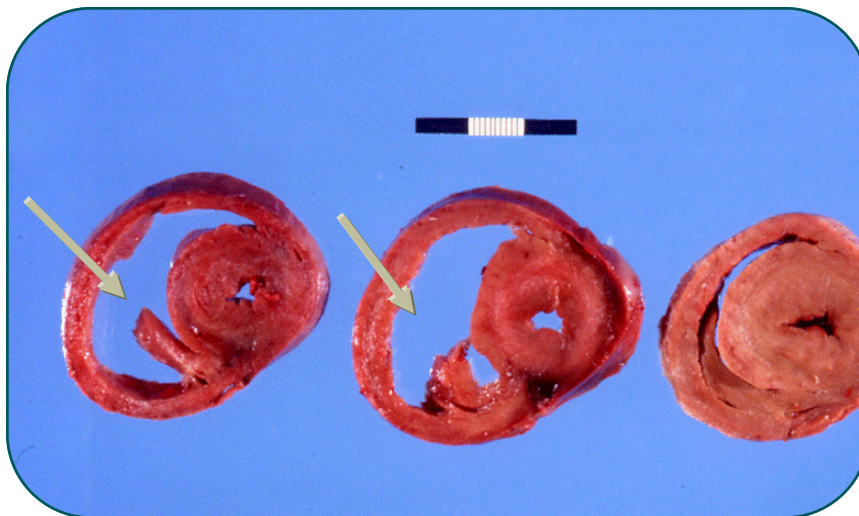


Figure 4: Cross sections of three broiler chicken hearts with varying degrees of right-sided heart failure. The heart on the right is the most normal. The two hearts on the left each have a markedly dilated right ventricle (arrows).

Ascites



Prevention/control

There is no treatment for ascites but the disease can be prevented by feeding a balanced diet, slowing down the growth rate and raising the birds in stable environmental temperatures (i.e. temperature fluctuations with cool nights that increase the bird's metabolic and oxygen demands will make the condition worse). Slower growing strains of chickens like barred-rock have a much lower incidence of this disease.

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¹
**UNIVERSITY
OF GUELPH**



CONTACT

OMAFRA's
Agricultural
Information
Contact Centre:
1-877-424-1300