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Hydrops Amnii

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Hydrops amnii, also known as hydramnion, or hydramnios, is a term taken from medical terminology where in the female the allantois ceases to exist at an early date and the dropsy naturally occurs in the amnion. In veterinary obstetrics this term is somewhat of a misnomer since in domestic animals there exists two ample cavities of the fetal envelops, the amniotic and allantoic, which regularly contains fluids in varying amounts. In veterinary obstetrics the term is used to indicate an excessive amount of fluid in the allantoic or the amniotic cavities. These two cavities communicate through the urethra-urinary bladder-urachus passageway and approximately equal pressure is maintained within the two cavities. The allantoic sac is much larger and generally contains the major volume of the fluid.

Hydrops amnii is observed rarely in the ewe and goat and very rarely in the mare. No record of its occurrence had been reported in the sow or cat. The most important animal involved is the cow. It is observed most often in the dairy breeds.

The condition occurs most frequently from 6 months pregnancy to termination with most cases falling into a range of 6 to 8 months. The exact cause of this condition is not known at the present time.

The authors are members of the present junior class. This paper was prepared as a special assignment for special pathology under the direction of Dr. F. K. Ramsey.

Gierer observed it most frequently in poorly fed animals and particularly in cows under improper hygiene. There is much evidence that hydrops of the amnion and allantois is generally dependant upon uterine diseases. In a case of Finchers, the non-gravid cornu was destitute of caruncles; the cervical area had lost its caruncles and as a substitute had developed adventitious placental tissue; the gravid cornu had been seriously damaged and had but 40 caruncles. This was all clearly traceable to a retained placenta upon which account Fincher advised against breeding but was over-ruled.

This condition is probably most frequently observed in pluripara but is not rare in primipara. In a group of heifers studied there is a question as to the background of the assumed primipara. Often they are unreliable breeders and are commonly bred several times before recognized conception occurs. They may have conceived at an early service, or the embryo perished and decomposed, or one cornu of the uterus became badly damaged. The afterbirths were retained in many instances. The group as a whole had juvenile genital organs which were atonic and highly vulnerable to disease.

According to the above data it would seem that hydrops amnii is dependent upon pathological changes of the endometrium and chorion. However, Kammermann and Williams observed a high prevalence of the disease following a wet summer with consequently damaged for-
age. Probably the damaged forage afforded insufficient nourishment and hence lowered resistance to utero-fetal disease.

In some cases, the prevalence of the disease appears to be associated with the male. A pair of bison were placed in a pasture with a herd of Shorthorn cattle. The male mated with several Shorthorn cows and pregnancy followed. Only one hybrid was born; the other cows perished from hydrops of the amnion and allantois. The disease was not noted among the other cows of the herd bred to the Short-horn bulls.

Some authors are of the opinion that obstruction to the fetal circulation induced by torsion of the umbilical cord or imperfection of the function of the heart or liver of the fetus may produce the condition.

Another possibility is that a viral agent may be the cause. However, not much has been done on this subject. It would seem that an agent causing edema of the membranes could cause an extensive amount of fluids in the amnion and chorion.

Normally the amount of amniotic fluid for the cow is 3 to 6 liters and that of the allantoic cavity is approximately 6 to 15 liters. The amounts of fluid present in the pathological cases is subject to great variation and there really is not any clear line between physiological and pathological volumes. In the cow about 50 gallons of fluids seem to be the maximum because it is near the limit in weight under which a cow is able to get up and walk. Once obligatory recumbency is established, the disease soon ends in death.

The exact course of the condition is not known. In many cases it does not attract much attention until it has acquired an extreme degree. Then the symptoms of the cow are noted and a diagnosis made.

An outstanding phenomenon of this condition is the inability of the animal to abort or to give birth to the young. The distention of the uterus seems to act as a barrier to abortions.

A peculiar thing about this disease was cited in one particular case. About 12 to 15 gallons of fluid were withdrawn through a trocar. The recumbent cow showed some relief and got up readily. However, within 48 hours the fluid had been restored to the original volume. Apparently the fluids consumed went almost immediately to the fetal membranes, while the cow, drinking greedily, was suffering from water starvation.

The symptoms in the cow vary greatly but usually do not attract much attention until the disease has acquired an extreme degree. In most cases the patient is free from pain and fever, looks bright and may retain a fair appetite. Thus, the severity of the condition is often deceptive to both the owner and the inexperienced veterinarian. However, some of the general symptoms of ill health appear and are indicated by rough and sparing hair coat, sunken eyes with the general appearance of dullness, weakness and anemia. The pulse is weak and frequent. Respiration is labored, especially in the later stages when the enlarged uterus begins to press against the diaphragm giving respiratory distress. There may be constipation and decrease or suspension of rumination. The urine is decreased in quantity.

Intense thirst is noted especially in the terminal stages. Evidently the increased amount of fluid in the amnion and allantois must be derived from liquids which the animal consumes.

The abdomen becomes abnormally enlarged; rupture of the abdominal musculature occurs in severe cases. Rectal examination, the means by which diagnosis is usually made, reveals the uterus is abnormally distended with fluid and almost completely fills the entire abdominal cavity. Often a diagnosis of twin pregnancy, abnormally large fetus, tympanites or ascites may be made. No fetus can be palpated as it is surrounded by the fluid which exerts pressure on the uterine wall. Also the fetus is of higher specific gravity than the surrounding fluid and sinks to the floor of the abdomen. Vaginal examination reveals the os uteri to be normal and tightly constricted with the cervical seal in place. The posterior part of the uterus and the cervix may
project into the vagina due to uterine and intra-abdominal pressure.

Little work has been done in regard to macroscopic post mortem examination of the dam or the fetus. Few, if any, microscopic examinations have been recorded. The mother exhibits emaciation, anemia, and mild anasarca. The abdominal muscles are frequently ruptured presumably due to overdistention and overloading of the abdomen. The uterus is distended, pale, edematous, and exhibits ecchymotic hemorrhages. In rare cases the uterus may be ruptured. The fluid is found in the amniotic cavity, the allantoic cavity, and in between the amnion and allantois. The fluid is lipid, transparent, of a pale citron color with a sweetish taste. The fetal membranes vary in thickness and density.

Post mortem examination shows the fetus to be poorly developed and often exhibiting anasarca. The liver and kidneys show parenchymatous infiltration, and edema and anemia.

The prognosis depends upon the severity of the case. In a severe case, the fetus usually has been arrested in its development and has died. The dam seldom survives. In a mild case the prognosis is unfavorable for the fetus since it is usually very weak. The dam may survive with prompt assistance although the uterus remains flaccid and is prone to infection. A shock syndrome may occur if the fluid is drained away too rapidly. If the animal goes down, death may occur from the pressure on the diaphragm and heart. Bacterial infection of the uterus may occur due to the dilatation and flaccidity of the uterus and due to the toxemia resulting from the retention of the fetal membranes which usually follows the condition. It is assumed that the recovered animals and their progeny would be unsatisfactory for breeding purposes. In dairy cattle the milk production is usually so far below that of previous lactations that the animal is no longer considered an economic asset.

A beneficial treatment of hydrops amnii is elusive in that successful treatment in one case often proves to be ineffective when attempted by other veterinarians under similar circumstances. The prognosis is unfavorable regardless of the circumstances.

However, a few cases have been reported in the literature and a summation of these is as follows. In most instances a two step approach is made. The first step is to establish continuous slow drainage of the fetal fluid for pressure release. The method by which this is accomplished is left to the discretion of the practitioner. Methods described in the literature include the introduction of a plastic catheter into the horn of the uterus by means of a left flank incision and by the rupture of the membranes through the cervical canal with the subsequent insertion of a uterine catheter. Slow drainage is to be emphasized here since shock may occur if the pressure is relieved too quickly.

The second step consists of a routine left flank cesarean section. Richman in his report suggested perhaps a right flank incision would be more practical although the left has been favored in the other cases.

Recently two cases in which dilatation of the cervix was initiated by the use of estrodiolcyclopentylpropionate (ECP®) with later delivery of the calf per vagina and recovery of the cow have appeared in the literature. A combination of the two-step method and the administration of ECP® seems wise in that removal of the retained fetal membranes which follows, would be facilitated if the cervix was dilated.

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