BACILLARY WHITE DIARRHEA OF CHICKS

LABORATORY OF ANIMAL PATHOLOGY AND HYGIENE

A brief statement for the farmer of the cause of this disease, how its presence may be recognized in a flock, and how it may be combated.

Chicks Affected with the Fatal Type of Bacillary White Diarrhea
BACILLARY WHITE DIARRHEA OF CHICKS

Name.—Bacillary white diarrhea is known also as white diarrhea, septicemic white diarrhea, and bacillary septicemia of chicks.

Definition.—Bacillary white diarrhea is a specific, highly contagious disease of young chicks. It is one of the few diseases that may be transmitted directly thru the egg to the offspring. The disease may also exist in mature stock, but it often remains unrecognized, since there are no visible characteristic symptoms, as in the case of chicks. Some obscure losses in mature breeding stock, however, are traceable to this infection.

Cause.—The specific cause of bacillary white diarrhea is a microscopic organism known as Bacterium pullorum. This organism belongs to the colon-typhoid group and is credited with the production of a powerful bacterial poison. In affected chicks at autopsy the organism may be found in the blood, in the unabsorbed yolk, and in the internal organs. The feces of sick chicks contain large numbers of Bacterium pullorum. The organism is harbored in the ovaries of chronically affected hens, from which point it may gain entrance to the egg.

Symptoms.—Chicks infected thru the egg manifest symptoms in a few hours after hatching. In the acute type of the disease affected chicks (three to twelve days old) are drowsy and dejected in appearance. The feathers are ruffled, the wings droop, and the chick sways back and forth when in a standing position. Diarrhea often develops, with a "pasting up behind." Death follows in a few hours or at most in a few days. Chronically affected chicks that survive for a longer time appear lame, unthrifty, and dull, with a tendency to the development of a large abdomen. Mildly infected chicks grow to maturity, and while they appear to be healthy, harbor an ovarian infection and eventually become active spreaders of the disease.

Diagnosis.—Illness in young chicks accompanied by diarrhea is not always caused by the bacillary white diarrhea organism; chilling or improper feeding and housing may lower the vitality of young chicks and result in weakness, loss of appetite, and diarrhea. The only means of definitely distinguishing between such ailments and bacillary white diarrhea is by bacteriologic examination. In mature infected breeding stock, bacillary white diarrhea may be diagnosed by the serum agglutination test, or by examination of the ovaries at post mortem. Infected ova

![Fig. 1.—Chronically Affected Chicks That Survived an Acute Attack of the Disease. Such Chicks May Grow to Maturity and Become Chronic "Carriers"](image-url)
INSTRUCTIONS FOR COLLECTING BLOOD SAMPLES FROM BREEDING STOCK FOR DIAGNOSIS OF BACILLARY WHITE DIARRHEA

The Laboratory of Animal Pathology and Hygiene of the University of Illinois is prepared to make a limited number of serum agglutination tests for the detection of the above disease, for owners of breeding stock. Upon request, vials will be furnished for collecting blood samples, as well as leg bands bearing numbers for the identification of the hens. A charge of five cents per sample will be made to cover in part the cost of making the test. Valuable assistance can be obtained from a competent veterinarian in collecting blood samples.

Equipment

1. A small scalpel or very small, sharp-bladed penknife.
2. Leg bands for each chicken from which sample is to be taken.
3. Small glass test tubes, corks to fit, and labels.
4. A clean towel or a large piece of cloth for cleaning the instrument.

Procedure

1. Mark each bird with a leg band bearing a number.
2. Hold the bird on the lap, with its legs between the knees, in such a way as to permit of spreading either wing out at full length (see illustrations in Circular 273).
3. Raise the wing so that the large vein under the wing is brought into view.
4. Cut the vein near the body of the bird, either cross or lengthwise.
5. Collect the blood immediately, in the test tube. The tube should be filled about one-third full.
6. Cork the tube tightly, and write on the label the same number as that on the leg band of the bird.
7. Lay the tube on its side and allow the blood to clot.
8. Should the vein not stop bleeding, quickly press the cut portion between the fingers for a few moments.
9. After the blood in the tubes has clotted, set the tubes in a cool place, preferably in a refrigerator, until they are to be sent to the Laboratory.

Delivery to Laboratory

1. Blood samples should be delivered to the Laboratory by special messenger if possible.
2. If not possible to send by messenger, they should be packed securely in a mailing container and sent by parcels post, special delivery.
3. Address plainly to Laboratory of Animal Pathology and Hygiene, University of Illinois, Urbana, Ill., and mark your own name and address in a less conspicuous place on the package.
4. At the same time, address a communication in exactly the same way, stating character of samples and test desired. This is very important.

Precautions

1. Cleanse the scalpel or penknife thoroly after each bleeding.
2. See that the blade and the test tube are absolutely dry. Do not allow water to come in contact with the blood.
3. Keep the blood cool, but do not allow to freeze.
4. Label the tube accurately. Do not use ink, as it may blur.
are dark in color, firm in consistency, irregular in size, and angular in shape, as shown by the accompanying color plates.

Modes of Transmission.—Bacillary white diarrhea may be transmitted to the chicks thru the infected droppings of sick chicks, thru contaminated incubators, brooders, and pens, or directly thru the egg to the chick. A single infected chick at hatching time may be responsible, directly or indirectly, for communicat-ing the infection to the entire brood. Chicks are most susceptible to the acute type of the disease before they are five days old, tho symptoms may not be observed for several days following infection. If young chicks can be protected against exposure to bacillary white diarrhea during the first five days following hatching, the loss from the acute type of infection can be greatly reduced.

While it is not definitely established that the disease may be transmitted from mature infected hens to healthy hens thru association, or by an infected male thru breeding, it is possible that the rapid progress of the disease in breeding flocks may be accounted for in this way.

Prevention.—The control of bacillary white diarrhea depends on two factors: First, the detection of infected breeding hens by means of the serum agglutination test, and their removal from the flock; and second, the protection of newly hatched uninfected chicks against infection in incubators, brooders, and houses.

Flocks free from the disease are needed to supply healthy breeding stock. Avoid purchasing eggs or breeding stock from infected flocks. Isolate all exposed or infected chicks. Destroy all dead chicks by burning. Intestinal antiseptics, including sour milk, may be regarded as palliative remedies, but should not be depended upon to prevent the development of the disease in infected flocks.

Incubators, brooders, and houses should be cleaned and disinfected. Hot lye water (1 pound of lye to 40 gallons of water) applied with a broom or brush will aid in cleaning. A 3-percent compound cresol solution (U. S. P.) applied with a spray pump is a reliable disinfectant.

Valuable information and assistance can often be obtained from your local veterinarian in controlling infectious diseases of this character.

The Laboratory of Animal Pathology and Hygiene is equipped to make serum agglutination tests. Instructions for collecting blood samples for this test, will be found in a separate insert.

The test consists of mixing samples of blood serum with a suspension of known Bacillus pulorum and incubating the mixture at body temperature (37.5°C.) for twenty-four hours. At the end of this time the serum from non-infected hens shows no reaction, while the serum from chronically infected hens causes a clumping, or agglutination, of the bacterial suspension.

The test is generally applied in the late summer or early fall months after the flock has been culled. While the value of the test in detecting infected breeding stock over one year of age is well established, it must be remembered that the eradication of the disease is largely dependent upon the vigorous use of sanitary measures, as well as upon the detection and disposal of infected birds.
FIG. 3.—NORMAL OVA OF A HEALTHY HEN

FIG. 4.—OVA HARBORING BACTERIUM PULLORUM. THE DARK RED ANGULAR OVA ARE VISIBLY DISEASED

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