Pullorum Disease

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Other names: Bacillary White Diarrhea, BWD.

Cause, transmission, and epidemiology: *Salmonella pullorum* is pathogenic only to poultry. The organism is spread through infected eggs of layer carrier hens. From this vertical mode of infection hatched chicks can then transmit the infection horizontally to other chicks, through infected secretions or feces. It can spread further through contaminated incubators, hatchers, chick boxes, houses, equipment, poultry by-product feedstuffs, and carrier birds.

Clinical signs and lesions: Chicks are weak and may die, with morbidity and mortality rising 4-5 days after hatch. Signs include drowsiness, huddling, droopiness, and lack of appetite, but because of fever, birds tend to drink excessively. Respiratory distress may be seen, but characteristically diarrhea, showing as a white pasty vent area, is a major manifestation of pullorum disease. Sometimes the feces are stained with green bile. Survivors become asymptomatic carriers with localized infection in the ovary.

Post-mortem examination of chicks shows the following changes:

- Pasted white feces in the cloacal area.
- Grey patches (nodules) in the lungs, gizzard wall, heart and intestinal wall.
- Intestinal contents whitish and fluid or cheesy.
- Pin-point hemorrhage or grayish dead patches may be seen in the liver.
- Enlarged spleen.
- Ureters distended with whitish uric acid crystals.

Differential diagnosis: Other conditions that may present similar clinical signs are omphalitis, diseases caused by other *Salmonella* species, and chilling.

Diagnosis: Tentative diagnosis may be made based on history, clinical signs and post-mortem lesions. Definitive diagnosis is based on agglutination tests and isolation and identification of the causative agent, *Salmonella pullorum*.

Treatment: Results of treatment of pullorum disease are poor. Treatment is for flock salvage only. Several sulfonamides, antibiotics, and antibacterials are effective in reducing mortality, but none eradicates the disease from the flock. Survivors remain stunted and act as carriers. Eradication requires destroying the entire flock.

Prevention: In commercial poultry production prevention should be aimed at maintaining parent stock free from infection. These flocks are tested serologically, using the rapid plate agglutination test, confirmed with the tube agglutination test. Both tests employ stained *S. pullorum* antigen, which is commercially available. Incubator and hatching units should be properly disinfected, and if possible, the hatching operation should be in a pullorum-free area and be quarantined. Poultry farmers should ensure they obtain chicks from pullorum-free hatcheries.

Recovery: The entire flock must be culled and the poultry house properly disinfected and left empty for about a month before re-stocking.