DIGESTIVE DISORDERS OF TURKEYS

I. POULT ENTERITIS COMPLEX (PEC)

Poults enteritis complex is a terminology used to describe various infectious intestinal diseases of young turkeys. It includes numerous conditions such as turkey coronavirus (TCV), poult malabsorption or runting-stunting syndrome, and poult enteritis mortality syndrome (PEMS). These diseases all have the following common features: less than six-week-old turkeys develop diarrhea, soon followed by growth retardation and secondary nutritional deficiencies. However, while TCV is well characterized, poult malabsorption or runting-stunting syndrome and PEMS remain poorly defined in terms of etiology. Basic pathogenesis involves intestinal mucosal injury by one or more viruses, and possible secondary opportunistic infection by bacteria.

A. TURKEY CORONAVIRUS (TCV). See page 32.

B. POULT MALABSORPTION / RUNTING-STUNTING SYNDROME

DEFINITION

Poults malabsorption / running-stunting syndrome is an intestinal disease condition of young turkeys characterized by malabsorption/maldigestion of nutrients that may result in stunting, secondary nutritional diseases such as rickets or encephalomalacia, and secondary infections such as cryptosporidia or bacterial enteritis.

OCCURRENCE

Poults malabsorption / running-stunting syndrome generally occurs in turkeys between 7 and 28 days of age. Nutrient absorption and/or digestion are inhibited, causing decreased growth rate, stunting, poor feathering, skeletal problems, and an uneven flock. Lack of uniformity and skeletal lesions may persist throughout the grow-out period.

ETIOLOGY

Poults malabsorption/running-stunting syndrome is a multifactorial disease of unclear etiology. Viruses regularly isolated from intestinal tracts of affected poults include astrovirus, enterovirus, parvovirus and rotavirus. However, the detection of a viral agent from a diseased host does not in itself constitute a cause and effect relationship for that disease. In addition, Cryptosporidia, Cochlosoma, and coccidia have been identified and will increase severity and disease duration. Salmonella species and Gram-positive filamentous bacteria are also commonly isolated from affected birds. Dietary factors such as high protein levels in starter feeds, poor quality fats and fish meal, and mycotoxins have also been implicated in increasing the severity of the disease.

C. POULT ENTERITIS MORTALITY SYNDROME (PEMS)

DEFINITION

Two clinical forms of PEMS have been identified; an acute form with a sharp peak of mortality (mortality is greater or equal to 9% between 7 and 28 days of age, and daily mortality on three consecutive days is greater than 1%), and a less severe form (mortality exceeds 2% between 7 and 28 days but daily mortality does not reach 1% during three consecutive days), which as been referred to as Excess Mortality of Turkeys (EMT). Sick poults show diarrhea, dehydration, anorexia, growth depression, immunosuppression, and mortality, but also a variety of physiological abnormalities, including reduced body temperature, reduced energy metabolism and hypothyroidism.

OCCURRENCE

The disease occurs only in turkeys, when they are 7 to 28 days of age. There appears to be an age susceptibility; the younger the flock, the more severe the clinical expression. In the field, hens economically are
more affected than toms. The acute form of PEMS has mostly been observed in the southeastern United States and presents a seasonal pattern i.e., from late spring to early fall. While this form was prevalent in the late 90’s, it is now an uncommon occurrence. However, EMT is still regularly reported.

ETIOLOGY

The etiology of PEMS is still unknown. The disease can be experimentally reproduced by either contact exposure or oral inoculation of healthy poult with intestinal contents of infected poult, and it is believed that transmission is strictly horizontal. Several agents, including turkey coronavirus, rotavirus, astrovirus, Group 1 avian adenoviruses, torovirus and unidentified small round viruses, have been isolated from PEMS cases. However, none has been found capable of reproducing the disease alone or has been consistently associated with the disease. In addition to viruses, certain atypical *Escherichia coli* strains as well as other bacteria, and protozoa have also been associated with PEMS.

CLINICAL SIGNS

Affected poult are initially hyperactive and vocal but within twenty-four hours they become depressed, anorexic, and huddle together near heat sources. Feed and water consumption drop, while diarrhea develops. Litter quality rapidly deteriorates from abundant and watery droppings. Marked lack of uniformity can be observed few days after the onset of the disease. Clinical signs will wane within seven to ten days, but unevenness will worsen and remain for the duration of the life of the flock.

LESIONS

Lesions are characteristics of an acute severe diarrheal disease. Carcasses are dirty and exhibit signs of dehydration and emaciation. The digestive tract is empty with occasional presence of some litter material while intestines are thin-walled and dilated with fluid and gas. Lymphoid organs are atrophied in more severely affected birds.

DIAGNOSIS

Diagnosis of PEC requires flock records comparison for analysis of growth and brooding performance, clinical evaluation, collection of diagnostic samples such as sera, fecal droppings, water and feed samples, necropsy, and isolation and identification of enteric pathogens.

CONTROL

Biosecurity is of primary importance to control PEC. Biosecurity procedures include management of dead bird disposal, litter management, movement of used litter, controlling traffic patterns of people and vehicles, rodent control and water sanitation. Affected farms should be placed under quarantine and premises should be thoroughly cleaned, disinfected and fumigated. All-in/all-out production or separate brooding and finishing units are helpful. No vaccines are available.

TREATMENT

Supportive care for affected flocks includes raising house temperatures slowly until poult appear comfortable. Water-soluble vitamins and/or electrolytes should be added to the drinking water. Vitamin E added to the feed at twice the recommended level has been shown to be helpful. Antibiotics have been used with mixed success. They should be directed toward Gram-positive bacteria since those with Gram-negative activity may further upset normal intestinal flora.

Any action that will increase feed intake, such as walking frequently through the flock, remixing feed, top dressing feed with rolled oats, whole grains, etc., should have a positive effect of PEC. On farms considered at high risk of experiencing PEC, it is recommended to avoid placing birds from young breeders because their progeny is smaller and would be more susceptible to the disease.