Gastrointestinal disorders of backyard poultry – Part 2 of 2

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OTHER CAUSES OF INTESTINAL TRACT CAUSING DIARRHOEA

Birds have 2 types of droppings:

- Caecal droppings; which should be caramel-like in appearance.
- Non-caecal droppings; which should consist of firm brown material covered in a white urate cap from the urinary tract.

Care should be taken to differentiate diarrhoea from polyuria.

Diarrhoea should be homogeneous, whereas polyuria often manifests as a normal dropping surrounded by fluid. If diet, worms and coccidiosis have been ruled out, then PCR and faecal culture can be employed to look for specific viruses and bacteria.

NECROTIC ENTERITIS

Necrotic enteritis is a rare condition of backyard poultry and is usually restricted to intensive broiler production. The condition is associated with an overgrowth of *Clostridium perfringens* (usually type A), which is an intestinal commensal.

The overgrowth may be triggered by dietary factors, stress or intestinal mucosal damage. In most cases, the overgrowth is triggered by coccidiosis. The overgrowth causes toxic insults to the mucosa of the small intestine, leading to the formation of a diphtheritic pseudomembrane.

Affected birds are often hunched up with ruffled feathers, have diarrhoea and tend to be dehydrated. On postmortem, the classical pathognomonic pseudomembrane, along with necrotic contents, is noted. The breast muscle is dark and tacky due to dehydration.

Affected birds often have enlarged gall bladders due to inappetence antemortem. Diagnosis is usually based on PM examination. Cytology and bacteriology can be useful, but it is impossible to differentiate harmless commensal strains from an overgrowth of a pathogenic strain.

Treatment involves maintaining hydration, treating any underlying coccidiosis and the use of oral tylosin (20mg/kg) or amoxicillin (125mg/kg) for 5 days. Providing that treatment is timely, the prognosis is fair for the flock, but clinically affected birds often die. Prevention of the condition involves controlling coccidiosis together with good husbandry.

HAEMORRHAGIC ENTERITIS

Haemorrhagic enteritis is solely a disease of turkeys caused by an adenovirus. The condition affects young poults between 4 and 12 weeks when the levels of maternal antibodies are low enough to allow for infection. The virus predominantly damages the small intestine, causing haemorrhagic lesions with resultant haemorrhagic diarrhoea. Fluids and supportive care are essential to help birds through the condition.

Although viral in aetiology, secondary bacterial enteritis is highly likely and, therefore, amoxicillin at 20mg/kg per day for 5 days is recommended. The prognosis depends on the severity of the condition, but the survivors may be stunted.

DYSBACTERIOSIS

Dysbacteriosis is a widely used vague term to describe a non-specific diarrhoea involving a disruption of the normal intestinal flora. This may affect an individual bird or the entire flock. This disruption is caused by either a poor/unbalanced diet or an underlying pathogenic agent such as coccidia or mycotoxins.

Such birds often are presented with diarrhoea but are otherwise bright and alert with no other clinical signs. Severe cases may progress to necrotic enteritis.

In mild cases, birds often recover spontaneously. Probiotics are useful. More chronic cases may respond to tylosin (20mg/kg).

INTESTINAL SPIROCHAETOSIS

Brachyspira spp. are a genus of anaerobic bacteria that can cause diarrhoea in adult chickens. The bacteria are usually transmitted via the faeco-oral route.

Affected birds present with frothy yellow diarrhoea together with mild weight loss and a drop in egg production. Diagnosis is made on clinical signs, faecal cultures or PCR. Such birds rarely appear unwell, and most affected birds recover on their own. In severe cases, tiamulin (25mg/kg) can be used for 5 days.

ROTAVIRUS

Rotavirus can infect all species of poultry at all ages. The virus is spread via the faeco-oral route, including the surface contamination of eggs, leading to early infection of chicks.

September 2025

Infection can cause dullness, hunched up birds with ruffled feathers, inappetence, frothy yellow diarrhoea, dehydration and in some cases, death. Post-mortem findings are usually restricted to distended caeca with frothy yellow contents.

A diagnosis can be made using ELISA kits or PCR. There is no specific treatment, but maintaining hydration is crucial. Antimicrobials can be used orally for secondary bacterial infections. Prevention is based upon good hygiene.

GOOSE PARVOVIRUS

Parvoviruses can infect both Muscovy ducks and geese with similarly devastating effects to those found in canine parvovirus. The virus is spread both horizontally and vertically.

Birds from 1 week up to 1 month will often have diarrhoea, weight loss, naso-ocular discharge, ascites, conjunctival swelling, a diphtheric oral membrane and neurological signs. Older birds tend not to show clinical signs but can shed the virus for several weeks. Diagnosis is based on clinical signs in young goslings and Muscovy ducklings. Virus isolation can be used to confirm clinical suspicion.

Treatment may be attempted in mild cases using fluid therapy and antimicrobials. Treatment outcomes are age-dependent. For birds under 1 week of age, death is almost certain. Birds aged between 1 week and 1 month will have a guarded prognosis. For birds over 1 month old, the outcome is favourable. The virus is highly infectious, and this will usually be a flock problem.

DUCK VIRAL ENTERITIS

Duck viral enteritis is caused by a herpesvirus. The virus is typical of herpesviruses in that it becomes latent in the trigeminal nerve. During the stress of the breeding season, wild migrating birds will shed the virus in their faeces, leading to infection via the faeco-oral route and through cloacal uptake from contaminated water.

The most common sign of infection is the sudden death of birds during the summer months. Birds observed alive have a naso-ocular discharge, inappetence, neurological signs, photophobia, polydipsia and a watery (often haemorrhagic) diarrhoea.

PM lesions include haemorrhages throughout the body (due to vascular damage), thymic oedema, inflammation of the gut-associated lymphoid tissue, diptheresis of oesophagus and vent, and necrosis and haemorrhage of the intestine.

Diagnosis is based on clinical signs and the time of year. Confirmation is by PCR or virus isolation. Treatment is supportive, with the prognosis being poor. Survivors will be latently infected and will intermittently shed the virus when immunocompromised or stressed.

Prevention is primarily based on keeping wild waterfowl away.

INTUSSUSCEPTION

Intussusception is relatively rare in poultry. Whilst there is no single cause, there are several potential underlying contributing factors, including hypermotility, hypocalcaemia, internal parasites and other intestinal pathogens. Affected birds may strain, be inappetent, have diarrhoea, be dull and in severe cases, may go into shock and die. Diagnosis is best made using diagnostic imaging. This should help differentiate the condition from intestinal foreign bodies.

Surgical intervention is essential. The intussusception should be surgically reduced and, where necessary, resection of the relevant section of the intestine must be carried out. The prognosis is guarded.

REOVIRUS

There are several serotypes of reovirus found in poultry, each of which is associated with a range of clinical signs (poor growth, tenosynovitis, enteritis and malabsorption). Transmission is primarily through the faeco-oral route; however, vertical transmission has also been documented. Infection is most commonly associated with viral arthritis, but certain strains are associated with enteritis with the passage of wholly or partially undigested feed, poor growth and inappetence.

Treatment is supportive, and affected birds usually recover but may be stunted.

AVIAN TUBERCULOSIS

Avian TB is caused by *Mycobacterium avium*. It is relatively rare in non-aquatic fowl but is much more common in ornamental waterfowl and tends to infect older birds. The primary source of infection is through the faeco-oral route; however, the cannibalisation of infected carcasses is an important additional route of infection.

Once infected, the course of the infection is slow, with it taking up to several months for clinical signs to develop. Avian TB leads to the formation of tubercle-like granulomas throughout the body. Affected birds are emaciated, show lameness, are icteric due to liver damage and have diarrhoea.

Diagnosis in live birds can be carried out using the tuberculin test. This involves injecting 0.05ml of avian tuberculin intradermally into one wattle and checking the reaction 48 hours later. Any swelling in the injected wattle indicates a positive result. On PM, suspected lesions can be stained to look for acid-fast bacteria.

Treatment is not successful, and due to the risk posed to other birds, euthanasia should be considered. Although rare, it should be remembered that *M. avium* has zoonotic potential.

SALMONELLOSIS

Salmonella enterica causes gastrointestinal disease in poultry. There are three important subspecies (Arizonae, Gallinarum and Pullorum). Clinical signs include dullness, huddling, enteritis (leading to vent pasting), yellow/white diarrhoea, torticollis and blindness.

Salmonellosis has great zoonotic potential and is a controlled disease, and as such, outbreaks need to be reported to the state.

DISEASES PRIMARILY AFFECTING OTHER BODY SYSTEMS BUT WHICH MAY ALSO BE ASSOCIATED WITH DIARRHOEA:

- *E. coli*
- Mycotoxicoses
- Psittacosis
- Erysipelas
- *Pasteurella*
- Avian influenza
- Newcastle disease
- Infectious bronchitis
- Gumboro
- Mareks
- Lymphoid leucosis

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MULTIPLE-CHOICE QUESTIONS

QUESTION 1

What is the causative agent of necrotic enteritis?

a. *Salmonella typhimurium*
b. Avian influenza
c. *Pateurella multocida*
d. *Clostridium perfringens*
e. *Mycobacterium avium*

QUESTION 2

At what dose should tylosin be used to treat necrotic enteritis?

a. 20mg/kg
b. 2mg/kg
c. 50mg/kg
d. 5mg/kg
e. 10mg/kg

QUESTION 3

Which of the following birds is most likely to develop 'haemorrhagic enteritis"?

a. Muscovy ducks
b. Crollwitzer turkeys
c. Orpingon bantams
d. Swans
e. Broilers

QUESTION 4

What is the causative agent of "haemorrhagic enteritis"?

a. Rotavirus
b. Adenovirus
c. *Brachyspira*
d. Reovirus
e. Erysipelas

QUESTION 5

A client brings in a chicken that has had diarrhoea for the last two days. You notice that it has swollen tendons on both its feet. What is the most likely cause?

a. Rotavirus
b. Adenovirus
c. Brachyspira
d. Reovirus
e. Erysipelas

QUESTION 6

Which of the following is not a clinical sign of reovirus infection?

a. Cyanotic wattles
b. Tenosynovitis
c. Undigested food
d. Poor growth
e. Inappetence

QUESTION 7

Which of the following is most likely to contract TB?

a. Chickens
b. Pheasants
c. Quails
d. Swans
e. Turkeys

QUESTION 8

Which of the following is a symptom of Salmonellosis?

a. Yellow/White diarrhoea
b. Torticollis
c. Vent pasting
d. Blindness
e. All of the above

QUESTION 9

Which of the following is true?

a. Salmonellosis is rare in poultry.
b. *Salmonella* causes mild disease.
c. Salmonellosis is a controlled disease.
d. *Salmonella* has no zoonotic potential.
e. None of the above.

QUESTION 10

Which of the following diseases may be associated with diarrhoea?

a. Gumboro
b. Erysipelas
c. Newcastle disease
d. Avian influenza
e. All of the above

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AC/2453/25

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