



Escherichia coli Infections (*E. coli* or Colibacillosis)

- Generally a secondary bacterial infection causing many different signs and lesions in chickens and turkeys.
- *E. coli* from avian sources do not cause problems in mammals.
- It is not known whether chickens can carry *E. coli* that are pathogenic to humans. Widespread distribution because it is an intestinal inhabitant.

Etiology

- The bacterium *Escherichia coli* which is in the family Enterobacteriaceae meaning it is found in the intestine: this organism is coliform, gram negative, and motile.
- Most problems in poultry are caused by somatic antigen serotypes 01, 02, and 078.



Comment

- *E. coli* is not part of “normal flora” of seed eating birds. It is more often seen in birds that eat protein of animal origin like poultry.
- *E. coli* causes major economic losses in the poultry industry.

Types of Infection

- Depend on where primary problem occurs.
 - Respiratory – airsacculitis along with mycoplasma or virus infection. Virus may be vaccinal. Without *E. coli*, the mycoplasma infections would be less significant.
 - Omphalitis – (embryo & early chick mortality) egg transmitted due to penetration from contact with contaminated environment (dirty nest, floor eggs, egg washing, sweating after refrigeration, and dirty hatching equipment). This is a major chick quality problem.
 - Gastrointestinal – This is seen in turkeys and is usually primary but predisposed by contaminated feed, water or crowding.

Other *E. coli* Related Conditions

- Acute or Chronic Septicemia Involves Most any Body Tissue
 - Bordetella infection in turkey coryza occurring at 2-4 weeks or age results in secondary invasion by *E. coli* with increased mortality at 6-8 weeks of age.
 - Coligranuloma – usually liver, spleen and intestines.
 - Blackhead – secondary to histomonas.
 - Arthritic infections.
 - After HE in turkeys.



Method of Spread

- Very ubiquitous organism.
- From contaminated environment.
- Mostly through fecal contamination.

Dirty eggs





Incubation Period

- 72 Hours experimentally in one day old chicks.
- Under field conditions variable depending on the primary infection.



Mortality

- Variable: Usually high in acute conditions but negligible in chronic problems.
- Causes much of the mortality in turkey coryza (Turkey bordetellosis).



Course of Disease

- Omphalitis in chicks and poults and enteritis and hepatitis in turkeys are usually acute.
- Other conditions such as infectious process, salpigitis, coligranuloma, and air sac disease are usually chronic.



Signs

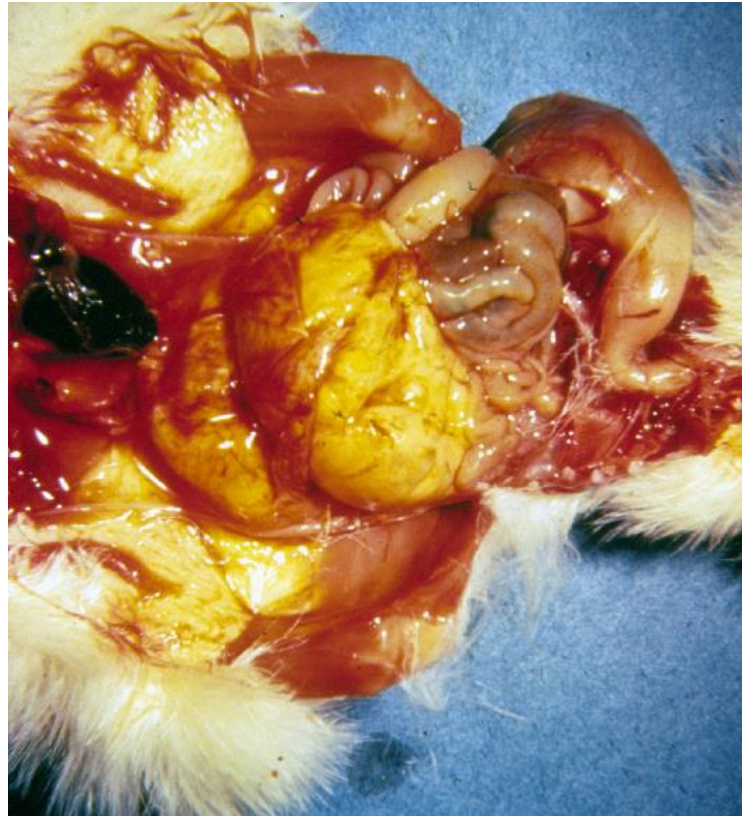
- Variable depending on system infected.
- Cyanosis in cases of respiratory disease.



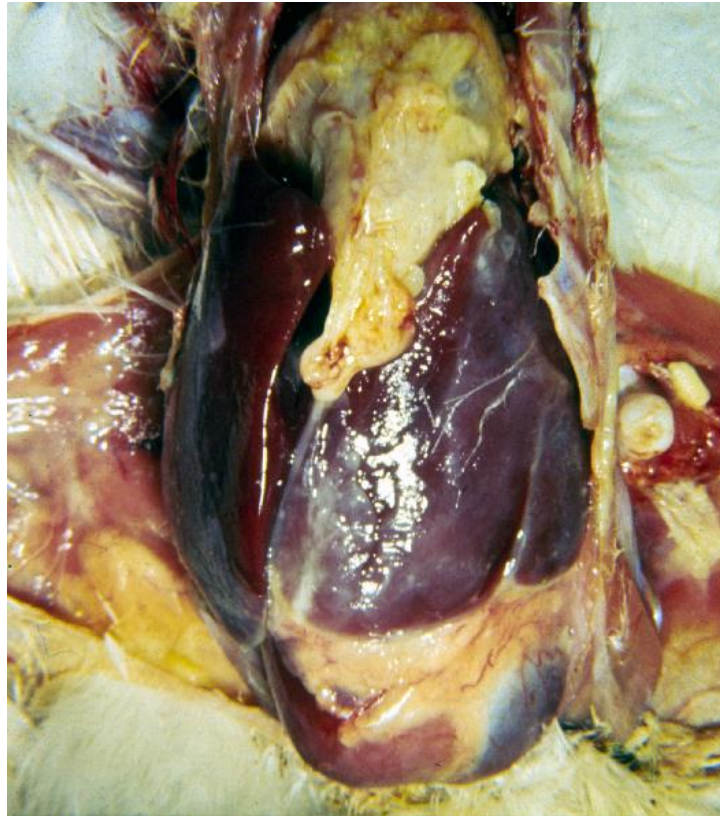
Postmortem Lesions

- Omphalitis
- Airsacculitis, peritonitis, perihepatitis, and pericarditis
- Enteritis
- Coligranuloma – looks like blackhead
- Salpingitis
- Arthritis and synovitis
- Infectious process

Omphalitis



Pericarditis, perihepatitis



Pericarditis

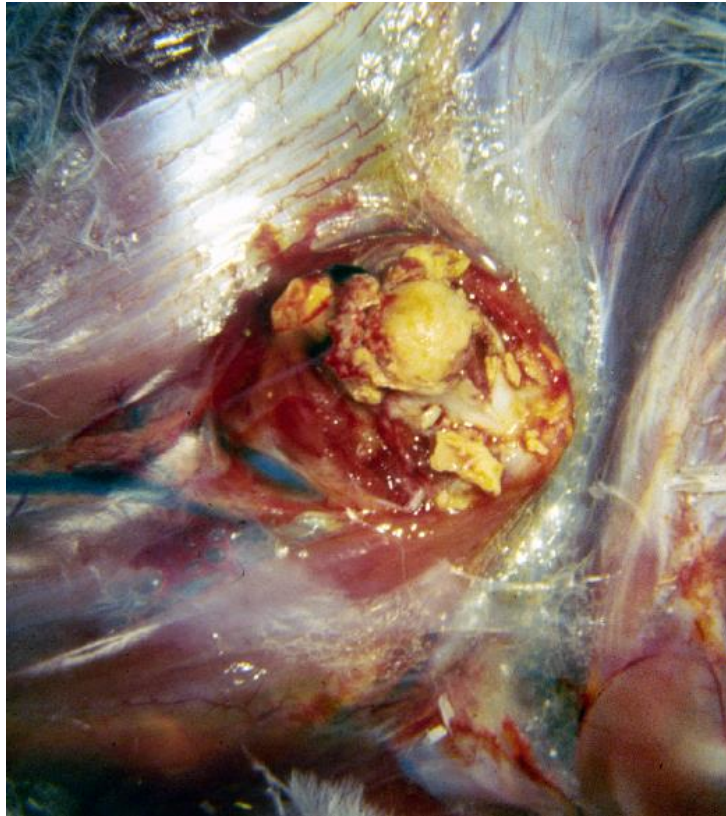


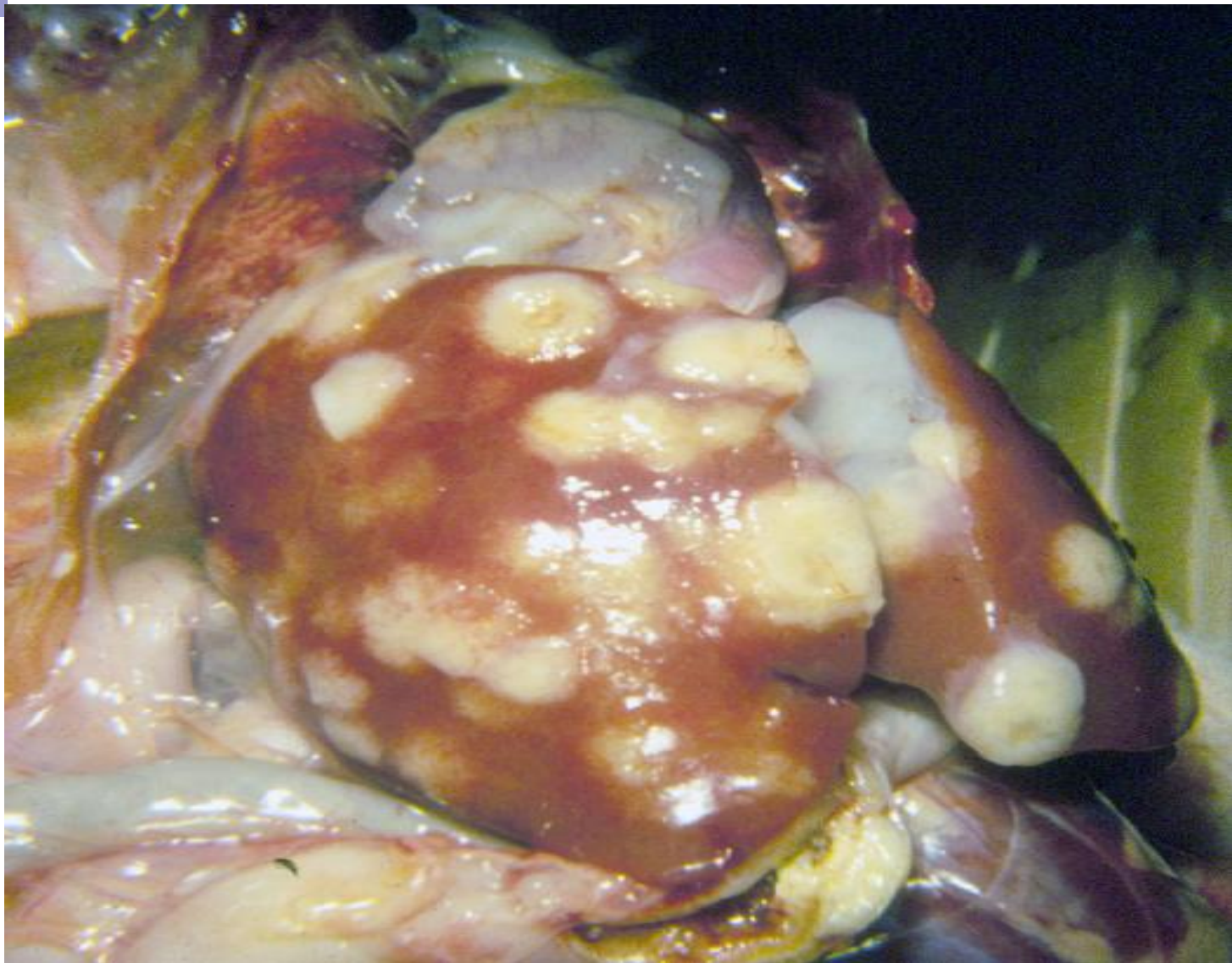


Chronic tenosynovitis

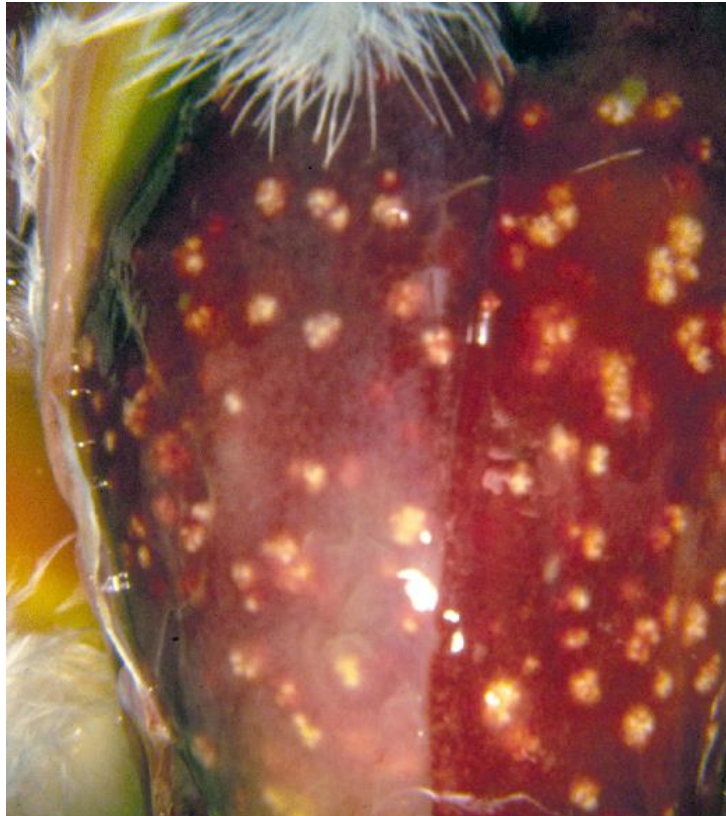


Arthritis





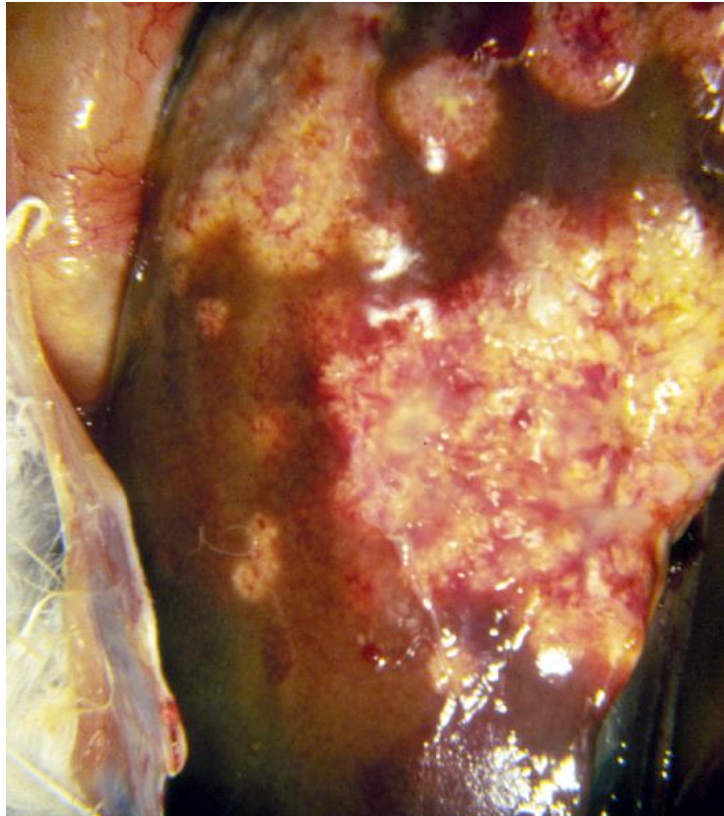
Coligranuloma



Coligranuloma



Coligranuloma



Coligranuloma



Infectious process



Infectious process





E. coli

■ Differential Diagnosis

- ☐ Mycoplasma
- ☐ Respiratory virus – NCD, IB
- ☐ Staph Infection
- ☐ Fowl Cholera
- ☐ Blackhead
- ☐ Erysipelas
- ☐ Salmonella
- ☐ Other bacterial septicemias

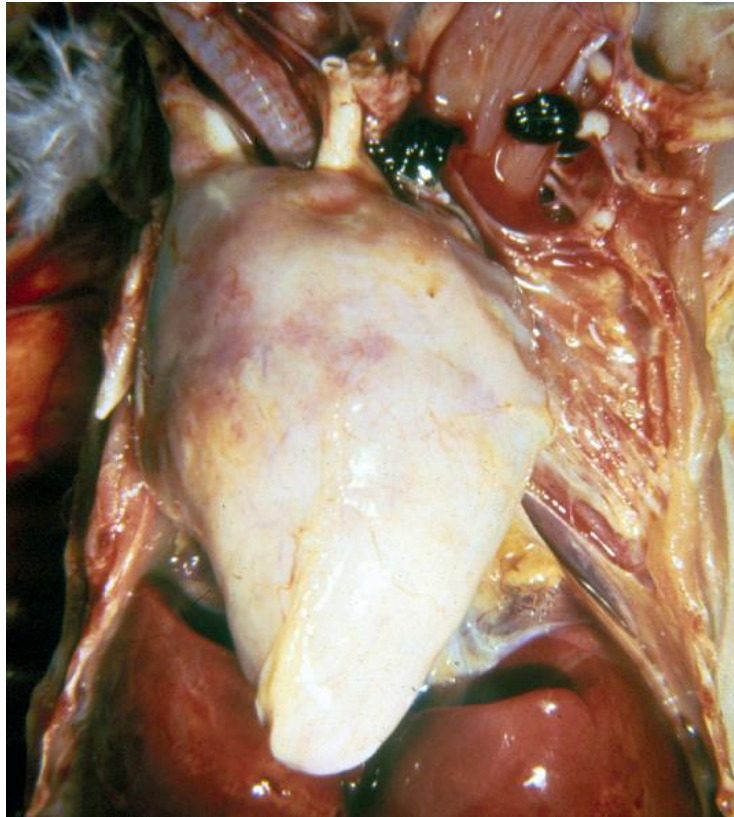
E. coli in Turkeys

- Usually brought on by stress such as crowding and heat. Usually from 3 to 12 weeks of age.
- Lesions –
 - Enteritis – dark duodenum with purple spleen in dead birds.
 - Pericarditis
 - Turkey coryza
 - Bordetella + *E. coli*.
- Can occur secondary to hemorrhagic enteritis.

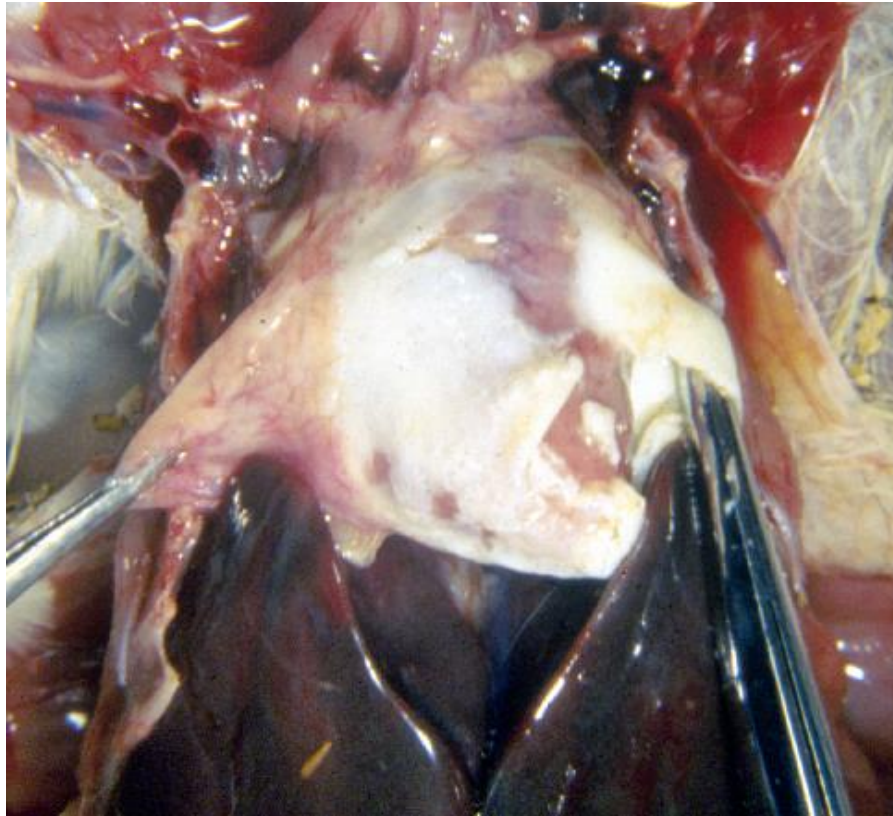
Enteritis



Pericarditis



Pericarditis





Treatment

- Don't treat chicks with omphalitis – most *E. coli* are resistant to everything.
- Sulfa drugs and antibiotics.
- Run sensitivity study.
- *E. coli* resistant to most drugs available for use in poultry.



Prevention

- Good egg sanitation – decreases omphalitis and I.P. (pre-incubation fumigation).
- Don't use floor or dirty hatching eggs.
- Use MG clean stock.
- Good, low stressful management.
- Continuous medication – not used much today as it can cause other problems.