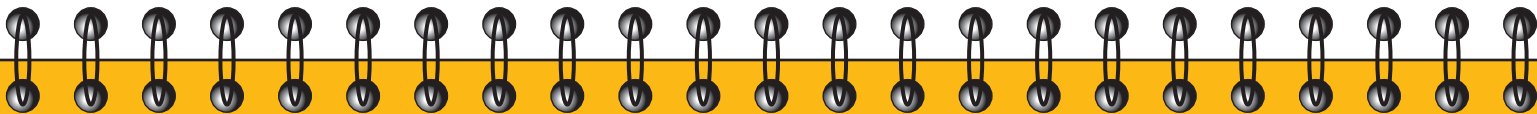




CEVA ANIMAL HEALTH

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NECROPSY

BROILERS and LAYERS



© O. LANGLOIS



Performing consistent and systematic field necropsies provide you with **valuable information for good flock management.**

For further on-farm training of necropsy techniques contact your local CEVA representatives.

A Good Necropsy is One Performed Systematically

EQUIPMENT



Forceps - Scalpel - Scissors - Gloves - Heavy shears

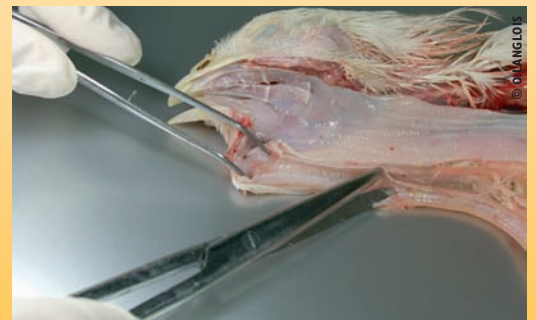
1 Before the Necropsy

- Review the clinical history.
- List the differential diagnosis.
- Observe clinical signs of flock.
- Euthanize the bird by cervical dislocation method.
- Examine the bird's exterior.



2 Start at the Head

- Moisten feathers with water.
- Lay bird on its back.
- Cut through corner of mouth to open it flat
 - examine oral cavity.
- Continue incision through the skin and esophagus following esophagus to the crop
 - examine vagus nerve, thymus, esophagus, and crop contents.
- Cut through larynx and continue to open trachea
 - examine tracheal mucous membranes and luminal contents.
- Remove upper beak tip with a transverse cut
 - inspect the nasal cavity and infraorbital sinuses.
- Cut open sinuses if swollen
 - examine fluids,
 - examine eyes.





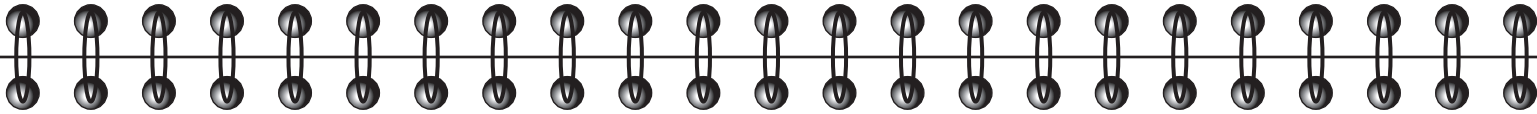
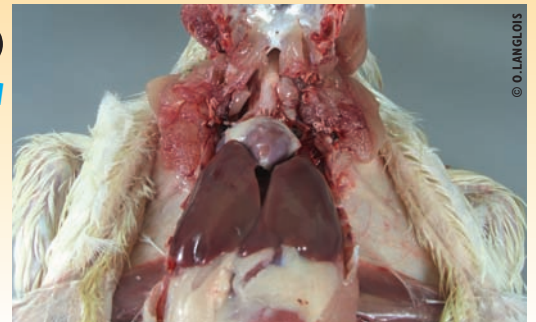
3 Opening the Body

- Cut the skin between the leg and abdomen.
- Pull and twist legs to disarticulate the femur from the hip.
- Cut the skin across the abdomen and reflect the skin to expose abdomen and pectoral muscles.



4 Exposing the Viscera

- Cut across abdominal muscles following the sternal border.
- Continue through ribs to thoracic inlet.
- Cut and open the rib cage to expose the viscera
 - examine surface of exposed organs and take microbiological samples if needed before proceeding to next step.



5 Examining the Viscera

- Stop and culture diseased organs if desired before proceeding to next organ to avoid contamination.
- Reflect liver and intestines to visualize air sacs, lungs, and kidneys.
- Remove organs as needed for further sampling and/or better visualization.

Organs to examine:

- liver, spleen, pancreas.
- kidneys.
- ovaries.
- heart, lungs.
- intestinal tract (including cecal tonsils).
- sciatic nerves and plexus.
- brain.
- bones and marrowbone.



BROILERS and LAYERS

GLOSSARY :

- AGID:** Agar Gel Immuno Diffusion
AGP: Agar Gel Precipitation
CF: Complement Fixation
ELISA:... Enzyme Linked ImmunoSorbent Assay
HA: HaemAgglutination
HI: Haemagglutination Inhibition
IF: ImmunoFluorescence
PA: Plate Agglutination
RPA: Rapid Plate Agglutination
RSA: Rapid Serum Agglutination
SN: SeroNeutralization
VN: Virus Neutralization



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Performing consistent and systematic field necropsies provide you with **valuable information for good flock management.**

This necropsy guide is a **practical tool** which, after describing the autopsy, provides a tabulated list of Broilers and Layers hens diseases classified by tropism.

Six tropisms
have been defined:



Respiratory	p10
Nervous system	p20
Locomotor system	p22
Digestive tract	p24
Liver	p26
Miscellaneous	p32

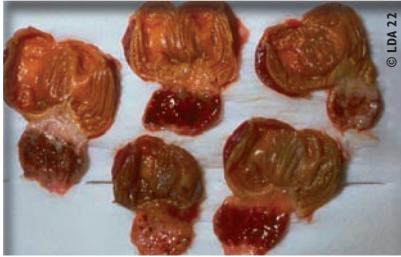
For each of those six tropisms and for each disease, etiology, clinical signs and photos of the most characteristic lesions that hint at that disease are provided, as well as the sampling and analysis to be carried out to confirm its diagnosis.

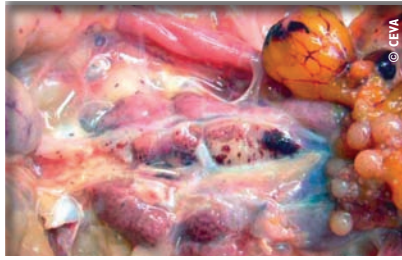
These panels have been specially designed for easy references during your autopsies **for more accurate lesion diagnosis and to adopt the best prevention and treatment strategies.**

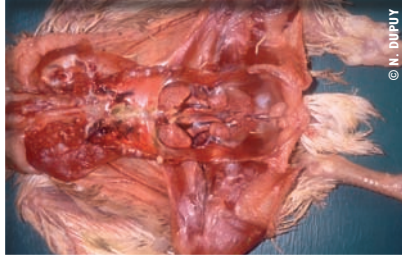

Diseases	List of the diseases according to their tropism and the age of appearance																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
<i>Adenovirosis p15</i>																														
<i>Aflatoxicosis p30</i>																														
<i>Ammoniac intoxication p10</i>																														
<i>Arthritis p22</i>																														
<i>Aspergillosis p19</i>																														
<i>Avian Encephalomyelitis p20</i>																														
<i>Avian Vibrionic Hepatitis p28</i>																														
<i>Avian Influenza p12</i>																														
<i>Avian Poxvirus p15</i>																														
<i>Botulism p20</i>																														
<i>Chicken Anemia p33</i>																														
<i>Clostridiosis p24</i>																														
<i>Coccidiosis p25</i>																														
<i>Colibacillosis p29</i>																														
<i>Colibacillosis p18</i>																														
<i>Cryptosporidiosis p18</i>																														
<i>Egg Drop Syndrome p34</i>																														
<i>Hepatitis p27</i>																														
<i>Histomoniasis p31</i>																														

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
<i>Infectious Bronchitis p13</i>																														
<i>Infectious Bursal Disease p32</i>																														
<i>Infectious Coryza p16</i>																														
<i>Infectious Laryngotracheitis p14</i>																														
<i>Infectious Nephritis p32</i>																														
<i>Infectious Synovitis p23</i>																														
<i>Leucosis p27</i>																														
<i>Liver steatosis p31</i>																														
<i>Marek Disease p21 & p26</i>																														
<i>Mycoplasmosis p16</i>																														
<i>Necrotic Dermatitis p34</i>																														
<i>Newcastle Disease p11 & p21</i>																														
<i>Pasteurellosis p17 & p21</i>																														
<i>Salmonellosis p21 & p29</i>																														
<i>Syngamosis p18</i>																														
<i>Trichomonosis p25</i>																														
<i>Tuberculosis p28</i>																														
<i>Viral Arthritis p23</i>																														
<i>Vitamin A deficit p10</i>																														
<i>Vitamin E and selenium deficit p21 & p22</i>																														


Vitamin A Deficit	ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS		DIAGNOSIS
Ammoniac Intoxication	<p>Broilers Layers</p>	<p>Non specific and discreet respiratory signs.</p> <p>Conjunctivitis.</p> <p>Morbidity = 100%.</p>		<p>Ammoniac smell.</p> <p>Ammoniac dosage (should be less 25 cm³/m³).</p>
		<p>Membranous deposit on the upper respiratory mucosa.</p> <p>Little signs during the early evolution.</p> <p>Mortality at the end of evolution.</p> <p>Other signs: keratomalacia (degeneration of cornea), xerophthalmia (dry eye), nephritis, urates deposits on various organs.</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> dosing vitamin A in blood, liver and eggs. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> trachea, larynx, esophagus → <i>epithelial metaplasia</i>. <p>Therapeutic diagnosis: administration of vitamin A.</p>

Newcastle Disease	<p><i>Paramyxovirus type I</i></p> <p>Broilers Layers</p>	<p>RESPIRATORY:</p> <ul style="list-style-type: none"> from simple oculo-nasal discharge to severe breathing disorders. <p>NERVOUS:</p> <ul style="list-style-type: none"> torticollis. <p>DIGESTIVE:</p> <ul style="list-style-type: none"> hemorrhagic lesions (proventriculus, small intestine, cecal tonsils). <p>Morbidity = 100%.</p> <p>Mortality = 5-100%.</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> swabs: trachea, lung, cloacae, proventriculus, brain → <i>virus isolation and immunofluorescence</i>. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> brain → <i>encephalitis</i>. lung → <i>intestinal pneumonia</i>. <p>SEROLOGY:</p> <ul style="list-style-type: none"> → <i>ELISA, SN, HI ++</i>.
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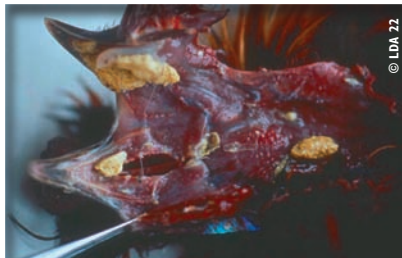
ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS	DIAGNOSIS
<p><i>Orthomyxovirus</i></p> <p>Broilers Layers</p>	<p>Respiratory disorders with various intensity.</p> <p>RESPIRATORY:</p> <ul style="list-style-type: none"> • sinusitis, nasal discharge, hemorrhage. <p>DIGESTIVE:</p> <ul style="list-style-type: none"> • diarrhea. <p>NERVOUS:</p> <ul style="list-style-type: none"> • non specific. <p>Layers:</p> <ul style="list-style-type: none"> • drop of production. <p>Morbidity = 50-80% (sometimes 100%).</p> <p>Mortality = 1-100%.</p> <p>Differential with NDV.</p> 	<p>SAMPLES:</p> <ul style="list-style-type: none"> • swabs: trachea and cloacae ➔ virus isolation and identification (HA). <p>SEROLOGY:</p> ➔ HI, ELISA, AGP.

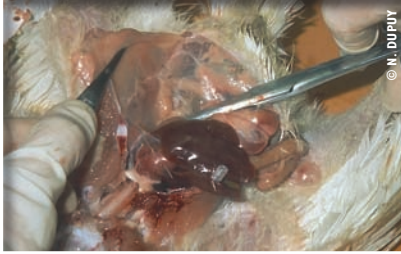

<p><i>Coronavirus</i></p> <p>Broilers Layers</p>	<p>Severe respiratory disorders. Seldom: nephritis.</p> <p>Layers:</p> <ul style="list-style-type: none"> • drop of production. • bad eggs quality. • rough and circled shell. <p>Morbidity = 80% (sometimes 100%).</p> <p>Mortality variable.</p>  	<p>SAMPLES:</p> <ul style="list-style-type: none"> • swabs: trachea and lung ➔ virus isolation and IF direct. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • trachea ➔ epithelial cells hyperplasia. <p>SEROLOGY:</p> ➔ HA, ELISA, AGID, SN, IF.
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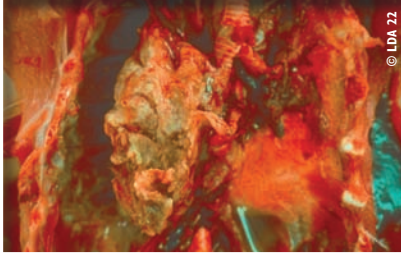
Infectious Laryngotracheitis

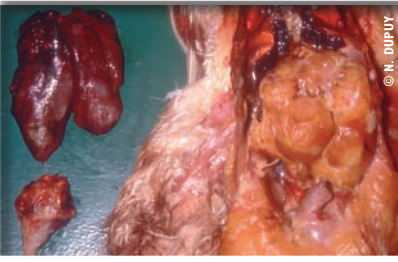
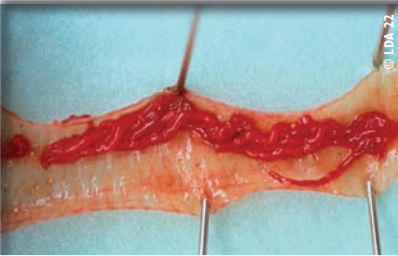
ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS		DIAGNOSIS
<p><i>Herpesvirus</i></p> <p>Broilers Layers</p>	<p>RESPIRATORY:</p> <ul style="list-style-type: none"> • <u>Acute</u>: breathing disorders, hemorrhagic nasal discharge (++). • <u>Sub-acute</u>: tracheitis, hemorrhagic, fibrinous exudates. <p>Layers:</p> <ul style="list-style-type: none"> • drop of production, then return to normal curve. <p>Morbidity variable.</p> <p>Mortality = 5-70%.</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> • swabs: trachea, lung, sinus → virus isolation. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • trachea → IF intranuclear inclusion bodies. <p>SEROLOGY:</p> <ul style="list-style-type: none"> → ELISA, IF, SN.

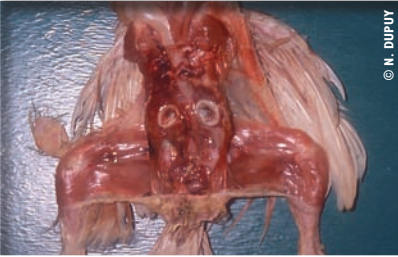
Avian Poxvirus



<p><i>Poxvirus</i></p> <p>Broilers Layers</p>	<p>RESPIRATORY:</p> <ul style="list-style-type: none"> • <u>Cutaneous form</u>: cutaneous lesions (nodular lesions) around head (part with no feathers). • <u>Strictly larynx</u> = diphteritic form: diphteritic membranes in oral cavity (nodular lesions). <p>Morbidity variable.</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> • cutaneous lesions → virus isolation. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • skin → intra-cytoplasmic inclusion. <p>SEROLOGY:</p> <ul style="list-style-type: none"> → IF, SN, HA, AGP. (mostly clinical diagnosis).
<p><i>Adenoviroritis</i></p> <p>Broilers</p>	<p>Discreet respiratory disorders.</p> <p>Morbidity variable.</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> • trachea, lung, feces → virus isolation. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • trachea → intranuclear inclusions. <p>SEROLOGY:</p> <ul style="list-style-type: none"> → AGP, IF, SN.

	ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS	DIAGNOSIS	
Mycoplasmosis	<p><i>Mycoplasma gallisepticum</i></p> <p><i>Mycoplasma synoviae</i></p> <p>Broilers</p> <p>Layers</p>	<p>RESPIRATORY:</p> <p><u>Chronic Respiratory Disease:</u></p> <ul style="list-style-type: none"> • sinusitis (infra orbital). • late growth. • salpingitis. • airsacculitis. <p>Layers:</p> <ul style="list-style-type: none"> • drop of production. <p>Morbidity: until 80%.</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> • air sac and trachea → isolation and identification. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • trachea and air sacs → high infiltration. <p>SEROLOGY:</p> <ul style="list-style-type: none"> → RSA, HI, ELISA.
	Infectious Coryza	<p><i>Avibacterium paragallinarum</i></p> <p>(formerly known as <i>Haemophilus paragallinarum</i>)</p> <p>Broilers</p> <p>Layers</p>	<p>RESPIRATORY:</p> <ul style="list-style-type: none"> • abundant nasal discharge. • conjunctivitis, sinusitis, facial edema (swollen sinus). <p>High morbidity.</p> <p>Low mortality (unless complicated with MG).</p>	

Pasteurellosis (Fowl Cholera)	<p><i>Pasteurella multocida</i></p> <p>Broilers</p> <p>Layers</p>	<p>RESPIRATORY:</p> <p><u>Highly acute:</u></p> <ul style="list-style-type: none"> • early (acute) mortality. <p><u>Acute:</u></p> <ul style="list-style-type: none"> • cyanosis (blue mucosa). • nasal discharge. • diarrhea with associated fecal material: <ul style="list-style-type: none"> - initially watery and whitish coloration - lately greenish, containing mucus. <p><u>Chronic:</u></p> <ul style="list-style-type: none"> • breathing disorders. • conjunctivitis, tracheitis, airsacculitis, pneumonia. <p>LESIONS:</p> <p><u>Acute:</u></p> <ul style="list-style-type: none"> • vascular lesions (heart petechia...). • swollen liver and necrosis. • enteritis. • lesions of genital tract <p><u>Chronic:</u></p> <ul style="list-style-type: none"> • localized infections can be everywhere. 		<p>SAMPLES:</p> <ul style="list-style-type: none"> • bone marrow, blood, liver, swab of nasal cavity and air sacs. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • hepatic lesions: similar to salmonellosis. <p>SEROLOGY:</p> <ul style="list-style-type: none"> → RPA, PA, ELISA.
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	ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS	DIAGNOSIS	
Colibacillosis	<p><i>Escherichia coli</i></p> <p>Broilers Layers</p>	<p><u>Numerous different infections:</u></p> <ul style="list-style-type: none"> infection of air sacs. omphalitis. colisepticaemia. swollen head syndrome. salpingitis. arthritis. pericarditis. fibrinous hepatitis. 		<p>SAMPLES:</p> <ul style="list-style-type: none"> trachea, air sacs and liver → isolation, identification, typing.
	<p>Syngamosis Cryptosporidiosis</p>	<p><i>Syngamus trachea</i></p> <p>Broilers Layers</p>	<p>RESPIRATORY:</p> <ul style="list-style-type: none"> 'yawning'. breathing difficulties. parasites in the trachea. <p>Seldom for chicken.</p>	

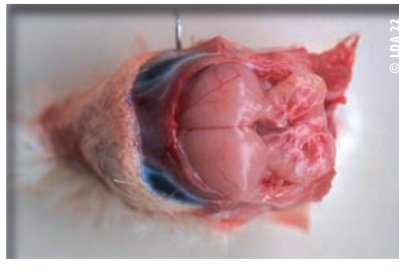
Aspergillosis	<p><i>Aspergillus fumigatus</i></p> <p>Broilers Layers</p>	<p>RESPIRATORY:</p> <p><u>Acute (++) young:</u></p> <ul style="list-style-type: none"> severe breathing disorder. yellow nodules on the lung. <p><u>Chronic (adult):</u></p> <ul style="list-style-type: none"> air sacs infections. fibrinous exudates. mycelium. lungs granuloma. <p>Mortality = 10-50%.</p> <p><u>Seldom:</u></p> <ul style="list-style-type: none"> Nervous signs. Digestive signs. 		<p>SAMPLES:</p> <ul style="list-style-type: none"> lung, air sacs → direct examination and isolation. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> lung and brain → PAS coloration for fungus infection.
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ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS		DIAGNOSIS
<p>Avian Encephalomyelitis</p> <p><i>Picornavirus</i></p> <p>Broilers</p> <p>Layers</p>	<p>Chicks:</p> <ul style="list-style-type: none"> • head shaking, increased when hang birds by foot. <p>Morbidity until 60%.</p> <p>Mortality = 25-50%.</p> <p>Layers:</p> <ul style="list-style-type: none"> • drop of production (with no associated signs). 		<p>SAMPLES:</p> <ul style="list-style-type: none"> • brain sampling ➔ <i>virus isolation.</i> <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • brain, pancreas heart, liver ➔ <i>microscopic lesions.</i> <p>SEROLOGY:</p> <ul style="list-style-type: none"> ➔ <i>ELISA, SN.</i>
<p>Botulism</p> <p><i>Clostridium botulinum</i></p> <p>Broilers</p> <p>Layers</p>	<p>Progressive flaccid paresis.</p> <p>Evolution from legs to neck paralysis.</p> <p>No macroscopic lesions.</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> • intestinal or stomach content. <p>TESTING:</p> <ul style="list-style-type: none"> • botulotoxin testing on mice.

Vitamin E and Selenium Deficit

Ataxia, brain edema hemorrhage.

Muscular dystrophy.



SAMPLES:

- brain

HISTOLOGY:

- brain
➔ *necrosis, edema.*

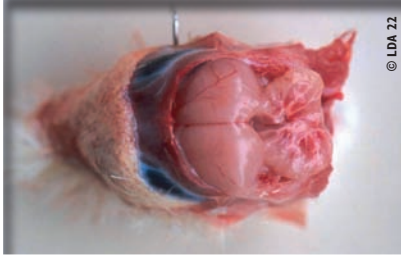


OTHER:


- feed: vitamin E dosage.

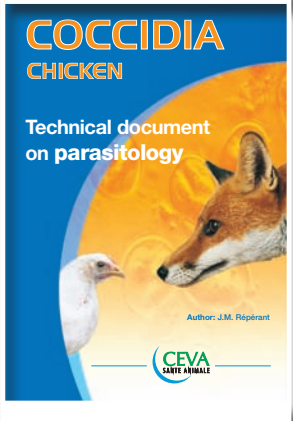
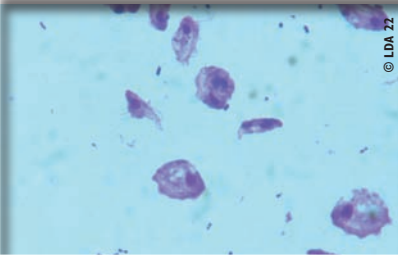
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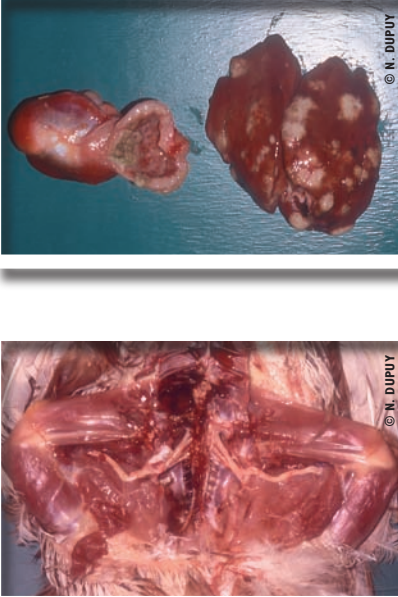
- Newcastle Disease
- Marek Disease
- Pasteurellosis
- Salmonellosis


NON SPECIFIC NERVOUS SYMPTOMS.

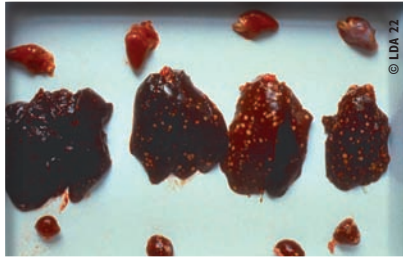
Vitamin E and Selenium Deficit	ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS		DIAGNOSIS
Arthritis	<i>Staphylococcus aureus</i> Broilers Layers	Myositis: light-colored streaks in the breast. Encephalomalacia.		SAMPLES: <ul style="list-style-type: none"> digestive content. HISTOLOGY: <ul style="list-style-type: none"> muscles.
Infectious Synovitis	<i>Mycoplasma synoviae</i> Broilers Layers	Arthritis with edema. Lesions of the synovial membranes.		SAMPLES: <ul style="list-style-type: none"> infected joint <ul style="list-style-type: none"> isolation of <i>Mycoplasma</i>. SEROLOGY: <ul style="list-style-type: none"> RPA, PA, HI, ELISA.
Viral Arthritis	<i>Reovirus</i> Broilers Layers	Edema of the tendon sheaths. Rupture of the gastrocnemius tendon.		SAMPLES: <ul style="list-style-type: none"> infected joint <ul style="list-style-type: none"> virus isolation, IF. SEROLOGY: <ul style="list-style-type: none"> ELISA, SN, AGID.


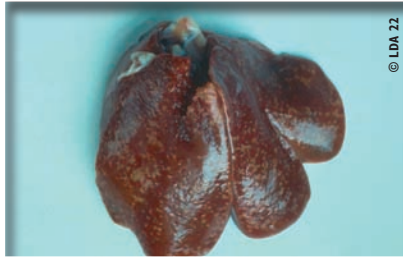
Clostridiosis	ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS		DIAGNOSIS
	<p><i>Clostridium perfringens</i> <i>Clostridium colinum</i></p> <p>Broilers Layers</p>	<p><u>Necrotic enteritis:</u></p> <ul style="list-style-type: none"> • anorexia. • hemorrhagic enteritis. • distention of the intestine (gas). • hepatic necrosis. <p><u>Ulcerative enteritis:</u></p> <ul style="list-style-type: none"> • very severe in quails. • ulcerative lesions of the lower digestive tract. 		<p>SAMPLES:</p> <ul style="list-style-type: none"> • intestine and liver ➔ <i>isolation and identification.</i> <p>HISTOLOGY:</p> <ul style="list-style-type: none"> ➔ <i>ulcerative lesion of intestine.</i>

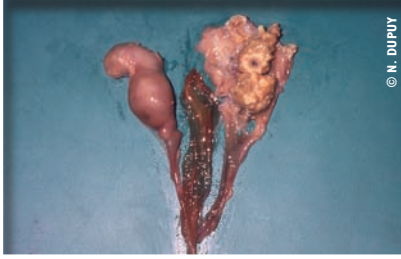

Coccidiosis	<p><i>Eimeria spp.</i></p> <p>Broilers Layers</p>	<p>DIGESTIVE:</p> <ul style="list-style-type: none"> • enteritis of various severity. • various lesions distributions. 		<p>SAMPLES:</p> <ul style="list-style-type: none"> • intestine and cecum ➔ <i>parasites examination.</i>
	<p><i>Trichomonas gallinae</i></p> <p>Broilers Layers</p>	<p>DIGESTIVE:</p> <ul style="list-style-type: none"> • feed apprehension disorders. • yellow nodules in oral cavity, esophagus, crop, intestine (seldom). 		<p>SAMPLES:</p> <ul style="list-style-type: none"> • the targeted organs.


ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS		DIAGNOSIS
<p><i>Herpesvirus</i></p> <p>Broilers Layers</p>	<p>Paralysis.</p> <p>Nerves hypertrophy.</p> <p>Tumors: liver, skin, heart, muscles, eyes...</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> tumors and nerves. feather tracts → virus isolation. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> neoplastic infiltrations. <p>SEROLOGY:</p> <ul style="list-style-type: none"> AGID, SN, IF, ELISA.


<p><i>Oncornavirus</i></p> <p>Layers</p>	<p>Diffuse and nodular neoplasms: liver, spleen, kidney.</p> <p>Poor morbidity.</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> liver, spleen, kidney, bursa of Fabricius. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> tumoral infiltration by lymphoblasts. tumoral infiltration "intrafollicular" within bursa. <p>SEROLOGY:</p> <ul style="list-style-type: none"> ELISA, CF.
<p><i>Adenovirus I</i></p> <p>Hepatitis (inclusion)</p>	<p>Hemorrhage syndrome.</p> <p>Medullar hypoplasia.</p> <p>Hepatitis.</p> <p>Nephritis.</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> liver and marrowbone → virus isolation. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> degeneration and necrosis of hepatocytes (inclusion bodies).



	ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS	DIAGNOSIS
Avian Vibrionic Hepatitis	<p><i>Campylobacter</i> spp.</p> <p>Broilers</p>	<p><u>Chronic infection:</u></p> <ul style="list-style-type: none"> • drop of egg production. • anemia. • emaciation. • spleen hypertrophy. • hepatitis lesions. 	<p>SAMPLES:</p> <ul style="list-style-type: none"> • bile, liver, spleen, heart ➔ <i>bacteriology.</i>
Tuberculosis	<p><i>Mycobacterium avium</i></p> <p>Broilers Layers</p>	<p><u>Chronic infection:</u></p> <ul style="list-style-type: none"> • lameness. • emaciation. • diarrhea. • drop of egg production. <p><u>Specific lesions:</u></p> <ul style="list-style-type: none"> • granuloma. • liver, spleen, intestine. 	 <p>SAMPLES:</p> <ul style="list-style-type: none"> • liver, spleen. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • Ziehl Nielsen coloration ➔ <i>AAR.</i> • inflammatory granuloma.


Colibacillosis	<p><i>Escherichia coli</i></p> <p>Broilers Layers</p>	<p><u>Coligranulomatosis:</u></p> <ul style="list-style-type: none"> • granulomatosis lesions on cecum, intestine, liver. • perihepatitis. • pericarditis. <p>CRD complications.</p>	 <p>SAMPLES:</p> <ul style="list-style-type: none"> • liver ➔ <i>bacteriology.</i> <p>HISTOLOGY:</p> <ul style="list-style-type: none"> ➔ <i>inflammatory granuloma.</i> ➔ <i>perihepatitis.</i>
Salmonellosis	<p><i>Salmonella</i> spp.</p> <p>Broilers Layers</p>	<p>Yellowish and stinking diarrhea.</p> <ul style="list-style-type: none"> • spleen: hypertrophy. • liver: hypertrophy green (bronzed) small necrosis area: 1-3 mm. <p>Horizontal transmission.</p> <p>Vertical transmission.</p>	 <p>SAMPLES:</p> <ul style="list-style-type: none"> • liver, spleen, eggs, cloacae swabs, litter ➔ <i>bacteriology.</i> <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • liver ➔ <i>hepatitis.</i> • heart ➔ <i>myocardial necrosis.</i> <p>SEROLOGY:</p> <ul style="list-style-type: none"> ➔ <i>RPA, PA, ELISA.</i>

	ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS		DIAGNOSIS
Histomoniasis	<p><i>Histomonas meleagridis</i></p> <p>Broilers Layers</p>	<p>Enterohepatitis:</p> <ul style="list-style-type: none"> • liver: round necrosis lesions with hemorrhagic center. • cecum: cecal walls ulceration. 	 <p>© N. DUPUY</p>	<p>SAMPLES:</p> <ul style="list-style-type: none"> • liver and cecum → <i>microscopic examination.</i> <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • liver.
	<p>Liver Steatosis of the Laying Hens</p>	<p><i>Nutritional disease</i></p>	<p>Obesity.</p> <p>Significant decrease of egg production.</p> <p>Liver hypertrophy.</p> <p>Steatosis.</p> <p>Hemorrhage.</p>	 <p>© LDA 22</p>

Aflatoxicosis	<p><i>Aflatoxins</i></p> <p>Broilers Layers</p>	<p>Catarrhal enteritis.</p> <p>Liver: degeneration of cells evolving to cirrhosis.</p> <p>Bruises on subcutis and muscles.</p>	 <p>© Dr. KRENGSAK</p>	<p>SAMPLES:</p> <ul style="list-style-type: none"> • feed: → <i>toxin dosage + reproduction of disease.</i>
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	ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS		DIAGNOSIS
Infectious Bursal Disease (IBD)	<p><i>Birnavirus</i></p> <p>Broilers Pullets</p>	<p>Inflammation, followed by an atrophy of the bursa.</p> <p>Petechia in duodenum.</p>		<p>SAMPLES:</p> <ul style="list-style-type: none"> • bursa and spleen <ul style="list-style-type: none"> ➔ IF direct and serotype. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> • bursa <ul style="list-style-type: none"> ➔ lymphoid follicles necrosis, hemorrhage. <p>SEROLOGY:</p> <ul style="list-style-type: none"> ➔ ELISA, SN, IF, AGID.
	Infectious Nephritis	<p><i>Picornavirus</i></p> <p>Broilers</p>	<p>Non specific symptoms.</p>	

Chicken Anemia	<p><i>Circovirus</i></p> <p>Broilers Layers</p>	<p>Thymus and bone marrow atrophy.</p> <p>Liver atrophy.</p> <p>Hemorrhage: proventriculus, liver and muscles.</p> <p>Generalized anemia.</p> <p>Morbidity variable.</p> <p>Mortality variable (secondary infections).</p>	 	<p>SAMPLES:</p> <ul style="list-style-type: none"> • liver, marrowbone. <p>HISTOLOGY:</p> <ul style="list-style-type: none"> ➔ generalized lymphoid depletion. <p>SEROLOGY:</p> <ul style="list-style-type: none"> ➔ ELISA.
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	ETIOLOGY-Hosts	CLINICAL SIGNS AND LESIONS		DIAGNOSIS
EDS	<i>Adenovirus</i> Layers	Drop of production until 50% during 6 to 12w. Discolored shell: • egg without shell. • normal albumen.		SAMPLES: • liver and oviduct ➔ virus isolation, IF. HISTOLOGY: ➔ edema, atrophy of glandular tissue. SEROLOGY: ➔ ELISA, SN, AGID.
	Necrotic Dermatitis	<i>Clostridium</i> <i>Staphylococcus</i> <i>Escherichia coli</i>	Necrosis of sub cutaneous layer. 	

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