

Differential Diagnosis by Gross and Histologic Lesions

Liver	Species	bacteria	virus	fungi	protozoa	metazoa
Multifocal Hepatic necrosis	Bovine	Salmonella typhimurium	IBR (BHV-1)		Neospora caninum Toxoplasma gondii	Cysticercus tenuicollis (adults are taenia hydatigena) Echinococcus granulosus (dogs definitive host) Stilesia hepatica Stilesia globipuncta Thysanosoma actinoides Fasciola hepatica (adults in bile ducts) Fasciola magna (adults in liver)
	Sheep	Clostridium hemolyticum Clostridium novyi (Black disease) Hemophilus agni Yersinia pseudotuberculosis Pasteurella hemolytica Campylobacter fetus fetus neonates and fetus Brucella spp Chlamydia psittaci Campylobacter coli, jejuni	CHV Rift Valley fever (bunyaviridae, phlebovirus) Wesselbron Disease (flaviviridae)		Toxoplasma gondii	Cysticercus tenuicollis (adults are taenia hydatigena) Echinococcus granulosus (dogs definitive host) Stilesia hepatica Stilesia globipuncta Thysanosoma actinoides Fasciola hepatica (adults in bile ducts)
Liver	Species	bacteria	virus	fungi	protozoa	metazoa
Multifocal Hepatic necrosis						

Liver	Goat				Toxoplasma gondii	Cysticercus tenuicollis (adults are taenia hydatigena) Echinococcus granulosus (dogs definitive host)
	Equine	Clostridium novyi (Black disease) Clostridium piliforme Actinobacillus equuli (sleepy foal disease) Listeria monocytogenes	EHV-1			Strongylus spp Cysticercus tenuicollis (adults are taenia hydatigena)
	Porcine	Clostridium novyi (Black disease) Salmonella typhimurium Salomonella cholerasuis	Pseudorabies (Herpes) PCV-2			Ascaris suum Stephanurus dentatus Cysticercus tenuicollis (adults are taenia hydatigena)

Liver Species bacteria virus fungi protozoa metazoa

Multifocal Hepatic necrosis

Liver	Feline	Clostridium piliforme (Tyzzer's) Francisella Tularensis (tularemia)	FHV FIP		Histoplasma capsulatum	Toxoplasma gondii	Capillaria Taenia taeniaformis
	Canine	Leptospirosis Nocardia asteroides Francisella Tularensis (tularemia)	CHV-1 CAV-1 (infectious canine hepatitis)			Neospora caninum	Capillaria Dirofilaria immitis (post caval syndrome)
	Ferret		Ferret Enteric Coronavirus (FeCV)				

Liver	Avian	Mycobacterium avium intracellulare	Pacheco's disease (Alpha Herpes)			Histomonas meleagridis (blackhead)	Athesmia foxi (trematode in bile ducts)
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	Chlamydomphila psittaci	Duck Plague (Alpha herpes)	Leukocytozoon (in heterophils)	
	Pasteurella multocida (Fowl cholera)	Marble Spleen Dz (Avian Adenovirus 2, pheasants)		
	Salmonella gallinarum (Fowl Typhoid)	Inclusion Body Hepatitis (Avian adenovirus-1, chickens, turkeys, geese, pigeons)		
	E. coli (coligranuloma)	Reoviral hepatitis Lymphoid leukosis (retrovirus type C)		
Mouse	Helicobacter spp	Murine coronavirus (syncytia)	Cysticercus fasciolaris (taenia taeniaformis)	
	Tyzzers disease (Clostridium piliforme)			
	Tularemia (Francisella tularensis)			
	Salmonella spp			
	Listeria monocytogenes			
	Yersinia pseudotuberculosis			
Rabbit	Tularemia (Deer fly fever) (Francisella tularensis)	Rabbit Hemorrhagic Virus (Calicivirus)	Toxoplasma gondii	Capillaria
	Bubonic plague (Yersinia pestis)			
	Salmonella sp			
	Listeria monocytogenes:			
	Tyzzers disease (Clostridium piliforme)			
Guinea pig	Salmonella enteritidis			
Deer				
Wild Carnivores				Athesmia foxi (trematode in bile ducts)
Primates	Yersinia enterocolitica	Herpes simplex Virus (HSV-1) with syncytia	Hepaticystis kochi (culicoides transmission)	Fasciola hepatica
	Yersinia Pestis	Herpesvirus Saimiri, INIB syncytia	Entamoeba histolytica	Athesmia foxi
	Salmonella	Callitrichid hepatitis (Arenavirus)		A. heterolecithoides

		Diplococcus klebsiella Shigella	Herpesvirus simiae (Herpes B) Ebola and Marburg (Filovirus)		Capillaria hepatica Schistosoma sp.
	reptiles			Entamoeba invadens	Athesmia foxi (trematode in bile ducts)

Liver	Species	bacteria	virus	fungi	protozoa	metazoa
Hepatic Abscesses	Bovine	Actinomyces spp Fusobacterium necrophorum Mycobacterium bovis		Mucor spp		
	Sheep	Corynebacterium pseudotuberculosis Mycobacterium avium intracellulare Mycobacterium bovis Yersinia				
		Goat	Rhodococcus equi goats			
	Equine	Rhodococcus equi foals				
	Canine	Nocardia asteroides				

Liver	Massive Necrosis					
Hepatocyte Toxins	Hepatitis Dietetica	Vit E/ Se deficiency plus Iron dextran				
	Pyrollizidine hepatotoxicity	megalocytes, fibrosis				
	Lead	INIB				
Centrilobular necrosis (Phase 1)	Xanthium spp					
	Acetaminophen	glucuronyl transferase deficiency				
	Aflatoxin B1					
	Nitrosamines					
	Cycasin					
	Gossypol					
	Microcystin LR	zonal or massive necrosis and hemorrhagic gastroenteritis				
Non-Hepatocyte Toxins	Sporodesmin	Bile epithelium	Cholestasis leads to photosensitization			
	TMS					
	Endotoxin	Kuppfer cells				
	Vit A toxicity	Hepatic stellate cells				
others	Amanita phalloides	inhibits RNA pol2	Hemorrhagic shrunken liver			
	Phalloidin	Disrupts actin filaments				
Chemicals	White phosphorus					
	CCL4					
	Cresols/ cottonseed					
	Copper	IV hemolysis and oxidative damage				
	Iron	Oxidative damage	irn dextran in pigs/ ferrous fumarate in foals			
Liver	Species	bacteria	virus	fungi	protozoa	metazoa
Portal hepatitis	Bovine					Dicrocoelium dendriticum
						Eurytrema pancreaticum
						Eurytrema coelomaticum

	Sheep	<p>Dicrocoelium dendriticum</p> <p>Metoechus cinjunctus, albidus</p> <p>Schistosoma mansoni, japonicum</p> <p>Eurytrema pancreaticum</p> <p>Eurytrema coelomaticum</p>
	Goat	<p>Dicrocoelium dendriticum</p> <p>Eurytrema pancreaticum</p> <p>Eurytrema coelomaticum</p>
	Equine	<p>Dicrocoelium dendriticum</p>
	Porcine	<p>Clonorchis sinensis</p> <p>Opisthorchis tenuicollis</p> <p>Schistosoma mansoni, japonicum</p>
	Feline	<p>Clonorchis sinensis</p> <p>Dicrocoelium dendriticum</p> <p>Opisthorchis tenuicollis (also viverrini)</p>
	Canine	<p>Clonorchis sinensis</p> <p>Dicrocoelium dendriticum</p> <p>Opisthorchis tenuicollis (also viverrini)</p> <p>Heterobilharzia americanum</p>
	Primates	<p>Clonorchis sinensis</p>
Liver		
Miscellaneous		

White liver disease
Tension lipidosis
Portal hypertension
Telangiectasis

Lymphocytic cholangitis

Cats >4 yrs,
clinical signs-
cholestasis and
icterus::bile duct
proliferation, portal
inflammation,
fibrosis

Amyloidosis
Chronic active hepatitis
Pigments
Neoplasia
Cirrhosis
Functional disturbances
Hepatocutaneous syndrome
Photosensitization

Destructive cholangitis

Dogs, TMS or
other drug induced
, necrosis of bile
duct epithelium,
inflammation within
portal areas,

Cyanobacteria

Helicobacter
hepaticus in mice
Microcystin
toxicity, binds bile
acid carrier, leads
to cytoskeletal
collapse

Histologic Features of Viruses

Adenovirus	Basophilic intranuclear inclusions	DNA
Alpha Herpesvirus	Eosinophilic intranuclear inclusion	DNA
Gamma Herpes	Syncytia	
Canine Distemper	INIB ICIB, and Syncytia	

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Microcystin toxicity, binds bile acid
carrier, leads to cytoskeletal
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Cyanobacteria