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Dr. Prem Sagar Maurya had completed his B.V.Sc & A.H. in the year 2009 from Bombay Veterinary College, Maharashtra Animal & Fishery Sciences University, Nagpur, Maharashtra, India. He got admission in a master program in the subject of Veterinary Parasitology at Indian Council of Agricultural Research-Indian Veterinary Research Institute, Bareilly, Uttar Pradesh, India after securing 23rd rank in All India ICAR-JRF examination. He had completed his Masters in the year 2011 and carried out research on Molecular characterization of *Cryptosporidium* spp. Isolated from domestic animals. He completed his Ph.D. in the year 2016 from the Council of Agricultural Research-Indian Veterinary Research Institute, Bareilly, Uttar Pradesh. He had worked on Molecular diagnosis *Cryptosporidium parvum* infection in calves during his Ph.D. degree program. He had been selected as Assistant Professor in the department of Veterinary Parasitology, College of Veterinary and Animal Science, Sardar Vallbhbhai, Patel University of Agriculture & Technology, Meerut, Uttar Pradesh, India in the year 2013. He has in his credit 39 research papers and 1 success stories. He is a member of 03 professional societies and attended conferences/ symposiums/ workshops. He has remained on a panel of experts for framing question papers for various Universities.

Description

This lecture note on “Parasites associated with morphology lesions/common name/clinical signs/symptoms/ treatment and control” were prepared and delivered to my BVSc.&A.H students studying Veterinary Parasitology courses. This course was offered during the academic year 2022-23 in the third professional year at College of Veterinary & Animal Sciences, Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut, Uttar Pradesh, India. This lecture provides over view of Veterinary Parasitology and basic facts. I had tried my level best to extract the contents simplify the facts in easy to memories in very short time. Further constructive suggestions to improve this lecture note are always welcome its users on my email and whatsapp.

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Parasites associated with morphology lesions/common name/clinical signs/symptoms/ treatment and control

1. *Fasciola* spp. within 24 hours, the miracidium exhausts its energy stores and dies.
2. One of the largest known trematodes.- *F. magna*
3. *Clostridium novyi* (Black disease & big head) in sheep- *Fasciola hepatica*, *Taenia hydatigena* larvae
4. Marita- *Fasciola* spp.
5. Pipe stem liver- *Fasciola hepatica*
6. Elephant liver fluke- *Fasciola jacksoni*
7. Oviduct fluke of poultry – *Prosthogonimus ovatus*
8. Aseptic peritonitis in poultry— *Prosthogonimus ovatus*
9. Slime ball- *D. dendriticum*
10. Cercaria vitrina- *D. dendriticum*
11. Lancet fluke- *D. dendriticum*
12. Lung fluke of Cats & dogs- *Paragonimus kellicotti*
13. Terrestrial snail *Cionella* spp. act as vector- *Dicrocoelium dendriticum*
14. Ant *Formica fusca* act as 2nd I/M host- *Dicrocoelium dendriticum*
15. Flame cell- Trematodes
16. H- shaped excretory system- Nematodes
17. Oncomiridium- Monogenea
18. Miracidium- Digenea
19. Metacercaria- adolescaria
20. Laurers canal- fluke
21. Katayama fever- *S. japonicum*
22. Gynecophoric canal- Schistosomes
23. Hump sore- *Stephanofilaria asmensis*
24. Ear sore- *Stephanofilaria zaheri*
25. Legs sore- *Stephanofilaria kaeli*
26. Enzootic cerebrospinal nematodiasis- *Setaria digitata*
27. Heart worm of fowl – *Bhalfilaria ladamii*
28. Sore head in sheep-*Elaeophora schneideri*
29. Villous atrophy- *Trichostrongylus colubriformis*
30. Hepatic cyctecercosis- *Taenia hydatigena*
31. Catarrhal bronchitis in pig- *Metastrongylus elongates*
32. Congestive cardiac failure in dog- *Dirofilaria immitis*
33. Cyst in perirenal fat of pigs- *Stephanurus dentatus*
34. Nodular taeniasis in poultry- *Railletinia (R) echinobothridia*
35. Milk spot on liver of pigs- *Ascaris suum*
36. Enzootic pneumonia- *Ascaris suum*
37. Hypertrophy of right ventricle- *D. immitis*
38. Edematous thickening of bile duct- *Opisthorchis tennucolis*
39. Bursati- *Draschia megastoma*, *Habronema muscae*

40. Gasping in birds- *Syngamus trachea*
41. Megaloblastic anaemia- *D. latum*
42. Black head diseases- *Histomonas meleagridis*
43. Cystacanth- *Acanthocephala*
44. Hemorrhagic cutaneous nodules in buffalo/ cattle- *Parafilaria bobicola*
45. Cerebrospinal nematodiasis- *Setaria digitata*
46. Summer sore- *Draschia megastoma*
47. Worms's nest- *Onchocerca* spp.
48. Coracidium - *D. latum*
49. Measly beef- *T. saginata*
50. Measly pork- *T. solium*
51. Morocoleather appearance in abomasums of cattle- *O. ostertagi*
52. Salmon poisoning in dogs- *Nanophyetus salmincola* carry *Neorickettsia helminthoeca*.
53. swimmer's itch/ cercarial dermatitis- waterfowl schistosomes (*Trichobilharzia*, *Austrobilharzia*, and *Bilharziella* species)
54. *Fercocercus cercaria*- Schistosomes
55. Gynecophoric canal- Male Schistosomes
56. Urinary bladder carcinoma- *S. haematobium*
57. Coracidium ciliated pseudophyllidean oncosphere
58. Bothria found in - *Diphyllobothrium* and *Spirometra*
59. Proceroid & plerocercoid- copepod (Cyclopes) and fish, *Diphyllobothrium*
60. Sparganosis- *Spirometra mansoni* plerocercoids (spargana)- present in the tissues of the frog
61. Fringed tapeworm - *Thysanosoma actinioides* (bile duct and duodenum of all ruminant except cattle)
62. Lappets- *Anoplocephala perfoliata*
63. Egg packet - *Dipylidium caninum*.
64. Tetrathyridium- *Mesocestoides* spp.
65. Aneurysm – *Strongylus vulgaris*
66. Colic in horse- *Strongylus vulgaris*
67. Barber pole appearance- *H. contortus*, white, egg-filled uterus of the female spirals around the blood filled gut
68. FAMACHA chart- *H. contortus*
69. Self cure- *H. contortus*
70. Largest eggs- *Nematodirus*
71. Stomach worm of swine- *Hyostrogylus rubidus*
72. Lung worm of cattle- *Dictyocaulus viviparus*
73. Lung worm of sheep- *Dictyocaulus filaria*
74. Lung worm of horses - *Dictyocaulus arnfieldi*
75. Difil™ - *D. filarial*
76. Dictol™ - *D. filarial*
77. Small strongyles worms – *Cyathostominae*
78. Large strongyles worms- *Strongylus vulgaris*, *Strongylus edentatus*, and *Strongylus equines*
79. Nodular worms – Oesophagostomins

80. Kidney worm of swine- *Stephanurus dentatus*
81. Eosinophilic meningitis and encephalomyelitis in man - *Angiostrongylus cantonensis* (I/M- snails)
82. *Angiostrongylus costaricensis* (I/M- snails)
83. Lung worm of dogs- *F. osleri* (occur in nodules in the trachea and bronchi)
84. Heterogonic life cycle-*Strongyloides*
85. Gilt- *Stephanurus dentatus*
86. Mclean county system- swine sanitation for raising pigs free from worms and necrotic infection was devised by Dr. B. H. Ransom and Dr. H. B. Raffensperger of the U. S. Bureau of Animal Industry.
87. Pinworm of horse - *Oxyuris equi*
88. Schot tape test- *oxyuris equi*
89. String test- *Strongyloides* spp. *Giardia* spp.
90. Humps or piglet anaemia- *A. suum*
91. Balling up in horse - *P. equorum*
92. Thorny headed worm- *Macocathorhynchus hirudinaceus*
93. Kidney worm of dog – *Diocotophyma renale*
94. Nurse cell- *Trichinella spiralis*
95. Intercalary host-*Capillaria hepatica*
96. Guinea worm/ hamlet worm- *Dracunculus medinensis*
97. River blindness in man- *Onchocerca volvulus*
98. Summer bleeding in horse- *Parafilaria multipapillosa*
99. Summer bleeding in cattle- *Parafilaria bovicola*
100. Modified Knott's Test- *Dirofilaria immitis*
101. Coin like lesion on lung- *Dirofilaria immitis*
102. Dirochek & petchek test- *Dirofilaria immitis*
103. Ballonets- *Gnathostoma spinigerum*
104. Stomach worm of cat- *Physaloptera praeputialis*
105. Gullet worm/ zigzag fashion- *Gongylonema pulchrum*
106. Stomach worm of pig- *Physocephalus sexualatus*
107. Hypertrophic pulmonary osteoarthropathy of long bone in dog- *Spirocerca lupi*
108. Naru disease- *Dracunculus medinensis* or Guinea worm
109. Stichosomes- *Trichinella spiralis*
110. Hanging groin- *Onchocerca volvulus*
111. Fairley's test- visceral schistosomiasis
112. Frenkel's test- for diagnosis of toxoplasmosis (*Toxoplasma gondii*)
113. Marita- newly hatched out from metacercaria
114. Salmon poisoning – *Nanophytes saminicola* or *Neorickettsia helminthoeca*
115. Lung fluke of dog & cat- *Paragonimus kellicoti*
116. Self cure – stoll (1929), Type-I, Ig E, *H. contortus*
117. Malignant tumor in oesophagus- *Spirocerca lupi*
118. Scarring of thoracic aorta- *Spirocerca lupi*
119. Eyes worm of fowl – *Oxspiura mansoni*
120. Eyes worm of camel- *Thelazia leesei*
121. Eyes worm of cattle- *Thelazia rhodesii*
122. Eyes worm of horse- *Thelazia lacrymalis*

123. Eyes worm of dog- *Thelazia callipaeda*
124. Cutaneous habronemiasis / summer sore/ bursati/ granular dermatitis- *Habronema* & *Draschia* spp. (but most *Draschia megastoma* appear to be most important)
125. Eosinophilic granuloma in intestine of man- *Angiostrongylus costaricensis*
126. Eosinophilic meningitis in man- *Angiostrongylus cantonensis*
127. Right ventricle of dog- *Angiostrongylus vasorum*
128. Lung worm of dog- *Filaroides milksi*, *Filaroides hirthi* & *Filaroides osleri*
129. Lung worm of cat-*Aelurostrongylus abstrusus*
130. Moose disease- *Parelaphostrongylus tenuis*
131. Lung worm of sheep- *Muellerius capillaries*
132. Lung worm of sheep & goat-*Protostrongylus rufescens*
133. Blood fluke - Schistosomes
134. Lung worm of pig- *Metastrongylus salmi* & *Metastrongylus apri* or *Metastrongylus elongates*
135. Lung worm of horse- *Metastrongylus arnfieldi*
136. Husk/ hoose- *Dictyocaulus viviparus*
137. Fog fever - *Dictyocaulus viviparous*
138. Pilobolus fungi- *Dictyocaulus viviparus*
139. Lung worm of sheep & goat- *Dictyocaulus filaria*
140. Lung worm of cattle- *Dictyocaulus viviparous*
141. Stomach worm of pig- *Hyostromylus rubidus*
142. Decrease HCl production by parietal cell – *Ostertagiasis*
143. Havoc in wool industry- *Chabertia ovina*
144. Large bell shape buccal capsule- *Chabertia ovina*
145. Leaf shape spicule- *Trichostrongylus vitrinus*
146. Step near tip spicule- *Trichostrongylus colubriformis*
147. Grouse disease- *Trichostrongylus*
148. Ring worm lesion- *Trichostrongylus*
149. Black scours worm- *Trichostrongylus*
150. Hook worm of elephant- *Bathmostomum sangeri*
151. Hook worm of of pig- *Globocephalus* spp.
152. Hook worm of sheep and goat- *Bunostomum plebotomum* & *Gaigeria pachyscelis*
153. Dwarf tapeworm- *Hymenolepis nana*
154. Rat tapeworm- *Hymenolepis diminuta*
155. Pork tapeworm- *Taenia solium*
156. Broadfish tapeworm- *Diphyllobothrium latum*
157. Thorny-headed worm/ Spiny headed worm- *Macracanthorhynchus hirudinaceus*
158. Brisket worm/ Abdominal worm- *Stephanofilaria stilesi*
159. Equine stomach worm- *Habronema* spp.
160. Brown Stomach Worm- *Ostertagia* spp.
161. Cooper's Worm/Cattle Bankrupt Worm- *Cooperia* spp.
162. Crisis- *Ancylostoma caninum*
163. Hook worm of man – *Necator americanus*
164. Hook worm of dog- *Uncinaria stenocephala*, *Ancylostoma caninum*
165. Hook worm of cattle- *Agriostomum vryburgi*
166. Hook worm of cat- *Ancylostoma tubaeforme*

167. Gape worm / traechial worm/ Y – shape – *Syngamus trachea*
168. Epaulettes- *Stephanurus dentatus*
169. Pimply gut/ knotty gut- *Oesphagostomum columbianum*
170. Ear shape dorsal teeth-*S. vulgaris*
171. Dorsal tooth with a bifid tip- *S. equines*
172. Corona radiata/ leaf crown- *Strogylus* spp.
173. Palisade worm - *Strogylus* spp.
174. Pin worm of fowl- *Subulura brumpti*
175. Phoconema/ codfish/ herring worm- *Anisakis* spp.
176. Enzymes involved in hatching of *Ascarid* egg-Chitinase and esterases
177. An ascarid without somatic migration- *Toxascaris leonina* (*A. galli* belongs to family heterakidae)
178. Hourglass shaped esophagus in - *Oxyuris equi*
179. Hourglass shaped buccal capsule found in- *Oxyspirura mansoni*
180. Funnel shaped pharynx: *Haebromema megastoma*
181. Cup shaped buccal capsule with cusp shaped teeth-*Stephanurus dentatus*
182. Parasite responsible for “ungroomed rat tail appearance” in horse-*Oxyuris equi*
183. Caecal worm of poultry- *Heterakis gallinae*
184. “Horse shoe” shaped ovary- *Echinococcus granulosus*
185. “Boot” shaped spicule- *Dictyocaulus filariae*
186. “Heart” shaped spicule- *Nematodirus baltus*
187. “Lancet” shaped spicule- *Nematodirus fillicolis*
188. “Spoon” shaped spicule- *Nematodirus spathiger*
189. “Y” shaped dorsal ray- *Haemonchus contortus*
190. Wing shape spicule- *Cooperia* spp.
191. Recurved spicules-*Gaigeria pachyscelis*
192. No spicule- *Trichinella spiralis*
193. Black scours worm-*Trichostrongylus colubriformis*
194. Barber’s pole worm/ wire worm/ large stomach worm/ twisted stomach worm-*Haemonchus contrtus*
195. Brown stomach worm- *Ostertagia ostertagi*
196. Fox hook worm- *Uncinaria stenocephala*
197. Pig hook worm-Globocephalus (*G. urosubulatus*, *G. longimucornatus*)
198. Elephant hook worm- Barthomostomus (*B. sangeri*), *Grammocephalus clatheratus*
199. Eddy worm- Class Turbellaria
200. Larva with “S” shaped tail- *Filaroides osleri*
201. “Stichosomes” are characteristic of- Trichurid esophagus
202. “Cordons” in-Ascaridae
203. “Bosses” in-Gongylonema
204. Cuticle extended posteriorly beyond the tail of worm-*Physaloptera* spp.
205. Bursa strengthened with chitinous plate-*Protostrongylus* spp.
206. L1 with characteristic cuticular knob-*Dictyocaulus filariae*
207. L1 with button hook tail-*Dipetelonema dracunculoides*
208. Anterior helmet seen in-*Dracunculus medenensis*
209. Definitive host of *Dioctophyma renale*- mink
210. The dish “Fessikhs” is associated with-*Heterophyses heterophyses*

211. The dish “Marrara” is associated with-Sparganosis
212. Halzoun syndrome associated with-Fasciolosis, *linguacula serrata* and spirometrosis
213. Cestode with “sickle” shaped hooks- *Taenia* spp.
214. Cestode with “rosethorn” shaped hooks- *Dipylidium caninum*
215. Cestode with “Hammer” shaped hooks-*Davinia* spp.
216. Cestode with “bunch of grape” ovary-*Dipylidium caninum*
217. Metacestode strobilocercus seen in-*Taenia taeniformis* (as *Cysticercus fasciolaris*)
218. Dumbbell shaped uterus: *Stilasia hepatica*
219. Fringed tape worm- *Thysanosoma actinoides*
220. Cooked rice grain appearance- monezia gravid segments
221. Cucumber shaped segments-gravid segments of *Dipylidium caninum*
222. Mud colour faeces- *Toxocara vitulorum*
223. Black head- *Heterakis gallinae* (Egg carrier of *Histomonas meleagridis*)
224. Parasitic otitis- *Rabditis bovis*
225. Villous atrophy-*Trochostrongylus* & *Nematodirus*
226. Pulpy kidney disease (with *Cl. welchi*)- *Nematodirus*
227. Swimmer’s itch- *Schistosoma* spp. (non human)
228. Foot rot in sheep-*Strongyloides papillosus*
229. Colic in horse-*Cyathostomum tetracanthum*
230. Haemorrhagic warts (in tracheal bifurcation)- *Filaroides osleri*
231. Fistulous whither-*Onchocerca cervicalis*
232. Wahi /kaseri/ summer mange- *Onchocerca* spp.
233. Arteritis in horse- Strongylidae family
234. Gastric tumour-*Gnathostoma spinigerum* and *Habronema megastoma* (*Draschia megastoma*)
235. Cholangiocarcinoma- *Clonorchis sinensis* (oriental liver fluke/Chinese liver fluke)
236. Urinary bladder carcinoma-*Schistosoma haematobium*
237. Swine fever” and epizootic pneumonia-*Metastongylus* spp.
238. Rot dropsy- *Fasciola* spp.
239. Snoring in cattle-*Schistosoma nasalis*
240. Nodular taeniasis in poultry-*Reilettina echinobothrida*
241. Hepatitis cysticercosa-*Cysticercus tenuicollis*
242. Gid/Staggers/ circling disease-*Coenurus cerebralis* (of *Taenia multiceps*)
243. False gid- *Oestrus ovis* (larva)
244. Macrocytic / pernicious anemia- *Diphyllobothrium latum*
245. Bass tapeworm – *Proteocephalus ambloplitis*
246. Neurocysticercosis - *Taenia solium*
247. Pseudoscolex – *Fimbriaria fasciolaris*
248. Window in the strobila- *Raillietina echinobothridia*
249. Largest tapeworm of poultry- *Raillietin tetragona*
250. Smallest tapeworm & most pathogenic of poultry –*Davainea proglotina*
251. Fringed tapeworm- *Thysanosoma actiniodes*
252. Fercocercous cercaria- Schistosome
253. *Cercaria pigmentata*-Amphistomes
254. *Cercaria pimentosa*- *Fasciola* spp.
255. Gillar/pitodisease- Amphistomes

256. Conical fluke: *Paramphistomum*, *Cotylophoron* and *Ceylonocotyle*
257. Genital sucker: *Heterophyes heterophyes*
258. Lung fluke of dog, cat & pig- *Paragonimus kellicotti*
259. Lung fluke of dog, cat, cattle, man & pig- *Paragonimus westermanii*
260. Ethmoidal sinus of fox- *Troglotrema acutum*
261. Flukes egg with filaments at both poles - *Ogmocotyle indica*
262. Head collar – *Echinostoma* spp.
263. Elephant blood fluke- *Bivitellobilharzia nairi*
264. Bottle jaw- *Fasciola hepatica*, *H. contortus* and *amphistomes*
265. Composites eggs- flukes (million of adults)
266. Simple eggs- gives one
267. Intestinal caeca un-branched – *F.buski*
268. Elokomin fluke fever-
269. Black spot disease of fish-*Posthodiplostomum cuticula*
270. Yellow grub in birds- *Clinostomum complanatum*
271. Grey pearl disease in birds- *Neodiplostomum perlatum*
272. Fercocercous cercaria- family- Strigeidae & Schistosomatidae
273. One miracidium gives – million of cercaria (600 cercariae- *Fasciola* spp.)
274. Head color- *Echinostoma*
275. Fairley's test - *Schistosomiasis*
276. Casoni test - IgE (immediate hypersensitivity skin test), hydatid disease, Echinococosis.
277. Viviparous fluke- *Gyrodactylus elegans*
278. Nodular Worm –*Oesophagostomum* spp.
279. Facial nerve paralysis in horses : *Sarcocystis neurona*
280. Villous atrophy- *Cryptosporidium parvum*
281. Ookinete - Motile zygote
282. Phanerozoite stage- Avian malaria
283. COFEB kit - *Babesia equi/Theileria equi*
284. Steatorrhea (presence of excess fat in faeces)-Symptoms of Giardiasis
285. Amprolium is most active against-First generation schizontal stage
286. Amprolium has structural similarity with- Thiamine
287. Neogard vaccine- *Neospora caninum*
288. Diamphenethide -Choice of treatment for acute fasciolosis in sheep (150mg/kg body weight)
289. Barbervax® vaccine- *Haemonchus contortus*
290. Anavac vaccine- *Anaplasma marginale*
291. Trichguard vaccine- *Tritrichomonas foetus*
292. Toxovax vaccine contains- S48 strain of *T. gondii*
293. Toxovax vaccine used in sheep for control of-Abortion
294. Rakshavac –T vaccine is a- Macro-schizontal vaccine
295. Nobilis COX ATM vaccine is used for control of-*Eimeria* spp.
296. Nobivac Piro vaccine is used for control of- *Babesia canis* & *B. rossi*
297. Lufenuron inhibits the- Chitin synthesis
298. Antidote of Imidocarb dipropionate in dogs-Atropine
299. Mechanism of action of benzimidazoles groups is -Binds with β -tubulin of parasite

- 300. Mechanism of action of ivermectin is- Bind to glutamate receptors that trigger chloride influx
- 301. Mechanism of action of imidocarb is- Inhibiting nucleic acid metabolism
- 302. *Stephanofilaria stilesi*- Brisket worm
- 303. Double bulbshaped oesophagus – Oxyuroids
- 304. Secernenteans- Only one testis (monorchic)
- 305. Adenophoreans- Two testes (dioorchic)
- 306. Ovijector- Trichostrongylids
- 307. Spring” or periparturient rise- Immune paralysis
- 308. Infective stage- In Ascarid L2 and L1 in *Trichuris*, *Trichinella* and *Capillaria* spp.

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