**Trematodes**

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There are two types of trematodes — digenes and mono-genes. Monogenetic trematodes have direct life cycles and are primarily ectoparasites of aquatic vertebrates. Digenetic trematodes have indirect life cycles and are endoparasites of a wide variety of vertebrates. Unless the veterinarian is involved in fish farming or treating aquarium fish, monogenetic trematodes are not encountered very often. Consequentiy, the emphasis of this book will be on the digenetic trematodes.

***Appearance and Morphology***

• Variable length, 0.5 mm to 10 cm.

• Body is covered with tegument; may have spines.

• Does not have anus; must regurgitate cecal contents to rid body of waste products.

• Most possess a muscular organ of attachment called an acetabulum (ventral sucker).

• Most are hermaphroditic (exception is the schistosomes — blood flukes); self-fertilization or cross-fertilization can occur.

***Classification***

Table **Classification of the Digenetic Trematodes Encountered in Veterinary Medicine** presents the families and species of digenetic trematodes encountered in North America.

Table **Classification of the Digenetic Trematodes Encountered in Veterinary Medicine**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Family**  | **Species**  | **First Intermediate Host**  | **Second Intermediate Host**  | **Definitive Host** |
| Fasciolidae | *Fasciola hepatica* | Freshwater snails | None | Ruminants, pigs |
| *Fascioloides magna* | Freshwater snails | None | Cervids |
| Paramphistomatidae | *Paramphistomum* spp | Freshwater/ amphibious snails | None | Ruminants |
| Dicrocoeliidae | *Dicrocoelium dendriticum* | Terrestrial snails | Ants | Cattle |
| *Platynosomum fastosum* | Terrestrial snails | Sowbugs/ woodlice | Felids |
| *Eurytrema* spp | Terrestrial snails | Probably grasshoppers | Raccoons |
| Troglotrematidae | *Paragonimus kellicotti* | Aquatic/ amphibious snails | Crayfish | Dogs, cats, mink, oppossum, raccoon |
| *Nanophyetes salmincola* | Aquatic snails | Numerous fish | Dogs, mink |
| Diplostomatidae | *Alaria* spp. | Freshwater snails | Tadpoles/ frogs | Dogs, cats, wild carnivores |

***Life Cycle***

• All digenes have indirect life cycles; stages include operculated egg, ciliated embryo (miracidium), asexual reproductive stages (sporocyst, redia), cercaria, metacercaria, adult.

• First intermediate host is some type of snail; miracid-ium penetrates or is ingested; asexual reproduction occurs resulting in cercarial stage; one miracidium in can equal hundreds to thousands of cercariae out.

• Cercariae can penetrate and encyst in second intermediate host, encyst on vegetation, or penetrate definitive host (schistosomes); encysted stage is called metacercaria.

• Definitive host becomes infected by ingesting plants or intermediate host with metacercarial stage; the cercariae of blood flukes (schistosomes) are directiy infective to the definitive host.

• Juvenile fluke migration can be extensive; adults live in a variety of organs; eggs are passed with the feces.