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Antihelmintic Agents

Updated: April 27, 2018.

OVERVIEW

Helminths consist of a diverse group of parasitic worms including nematodes (round worms), trematodes (flat worms) and cestodes (tapeworms). These infect a significant proportion of persons living in resource poor regions. The pathophysiology of disease varies depending on the species and the worm burden. Infections caused by Strongyloides stercoralis, Toxocara sp. and Enterobius vermicularis (pinworms) are endemic in the United States, but rarely cause clinically significant disease. Other enzootic infections are uncommonly encountered in the United States. Worldwide, helminth infections of the gastrointestinal tract are most common (pinworms, hookworms, Ascaris, Trichuris). Other nematodes have blood (Filaria sp.), skin (Onchocerca) or muscle stages (Trichinella sp.). Schistosomes, which reside in the blood stream, are the most common trematode (fluke) infection world wide. Other trematodes infect the gastrointestinal or biliary tract (many species) or lungs (Paragonimus sp.). Tapeworms consist of two stages that infect humans. The adult tapeworm stage resides in the intestine, but the form that causes disease is the larval stage. Thus, larval cysts of Taenia solium are found in the brain and cysts of Echinococcus in the liver or lung.

Antihelmintics [and year of approval for use in humans in the United States] include the benzimidazoles (thiabendazole [1967], mebendazole [1974] and albendazole [1996]), ivermectin [1996], nitazoxanide [2004], praziquantel [1982], pyrantel pamoate and niclosamide. Their mechanisms of action vary, but they frequently cause paralysis of the parasitic worm leading to its release and expulsion. With some exceptions, agents are specific to the category of parasite. As examples, praziquantel is employed in the treatment of trematodes and ivermectin for nematodes. Albendazole is broadly effective for many nematodes and some trematodes and protozoa. Importantly, the dose and duration of therapy varies considerably based upon the indication. For gastrointestinal infestations, a single dose of a poorly absorbed anthelmintic is usually effective, but dosing may have to be repeated once or twice, or given for 1 to 3 days particularly for trichuriasis. For systemic infections, multiple or a more prolonged course may be necessary, which can vary from 1 or 2 doses to daily doses for several months or years. Uncommonly, continuous therapy is needed for suppression.

Antihelmintics associated with hepatotoxicity include the benzimidazoles such as thiabendazole (now withdrawn), mebendazole and albendazole which have been linked to rare instances of cholestatic liver injury but which can be severe and prolonged. The other antihelmintics appear to have little hepatotoxic potential. In most instances, these agents are given for a short period only and many are not absorbed to a major extent.

Only the major antihelmintics available in the United States are discussed in this website.

The following antihelmintic agents are discussed individually in LiverTox:

- Albendazole
- Ivermectin

- Mebendazole
- Nitazoxanide
- Pentamidine
- Praziquantel
- Pyrantel
- Thiabendazole