3.18: Antihelmintic

There are two major groups of parasitic helminths in the human body: the roundworms (Nematoda) and flatworms (Platyhelminthes). See Figure 3.15 for images of a tapeworm and a guinea worm. Of the many species that exist in these groups, about half are parasitic and some are important human pathogens. [1]

**Indications:** Anthelmintic medications target parasitic helminths. [2]

**Mechanism of Action:** Because helminths are multicellular eukaryotes like humans, developing drugs with selective toxicity against them is extremely challenging. Despite this, several effective classes have been developed. Many anthelmintic medications work by preventing microtubule formation within the parasitic cell, compromising glucose uptake. Others work by blocking neuronal transmission within the parasite, subsequently causing starvation, paralysis, and death of the worms. Additionally, many antihelminths inhibit ATP formation and impair calcium uptake inducing paralysis and death. [3]

**Special Administration Considerations:** Prolonged therapy using antihelmintic medication can result in liver damage and bone marrow suppression.

**Patient Teaching & Education:** Patients on antihelmintic drug therapy should receive special instruction to ensure rigorous hygienic precautions to minimize the risk of reinfection. They should also wash all bedding, linens, towels, and clothing following treatment to minimize reinfection risk. [4]
Figure 3.15 A. The tapeworm Taenia saginata, that infects both cattle and humans. Eggs are microscopic, but the adult tapeworm like the one shown here can reach 4-10 meters, taking up residence in the digestive system. B. An adult guinea worm, Dracunculus medinensis, is removed through a lesion in the patient’s skin by winding it around a matchstick.

Now let's take a closer look at the medication grid on mebendazole in Table 3.18.

Table 3:18 Mebendazole Medication Grid

<table>
<thead>
<tr>
<th>Class/Subclass</th>
<th>Prototype/ Generic</th>
<th>Administration Considerations</th>
<th>Therapeutic Effects</th>
<th>Side/Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antihelmintic</td>
<td>mebendazole</td>
<td>Contraindicated during pregnancy; may cause fetal harm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>To help prevent reinfection:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Wash hands and fingernails with soap often during the day, especially before eating and after using the toilet</td>
<td>Elimination of worms</td>
<td>In prolonged treatment:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Wash all fruits and vegetables thoroughly or cook them well</td>
<td></td>
<td>-Hepatic effects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Wear shoes</td>
<td></td>
<td>-Bone marrow suppression</td>
</tr>
</tbody>
</table>

Critical Thinking Activity 3.18a

Using the above grid information, consider the following clinical scenario question:

A mother reports that her four-year-old son had a worm in his stool this morning. They live on a dairy farm. She reports that her son enjoys being in the barn during chore time, and it is common for the livestock to develop “worms.” Mebendazole was prescribed. What patient teaching should the nurse provide to the child and the mother?

Note: Answers to the Critical Thinking activities can be found in the “Answer Key” sections at the end of the book.

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