Parasite Life Cycles

by HEATHER SMITH THOMAS

There are several damaging internal parasites of horses. Knowing their life cycles can help a horse owner develop a more effective plan for controlling them. Charles T. Faulkner, PhD, Lecturer of Clinical Parasitology, College of Veterinary Medicine, University of Tennessee, says there are better ways to control them than to merely deworm horses on specific schedules dictated by the calendar.

Small Strongyles

Now that large strongyles have been nearly eradicated with the advent of avermectin dewormers, the most important internal parasite of horses is the small strongyle that lives in the large intestines and spends part of its life encysted in the wall of the intestine. "We used to talk about deworming treatments for those inhibited, dormant stages," says Faulkner. "Now, with the problem of drug resistance coming on, it may be more important for us to allow some of those parasites to sneak through the treatment and survive, to maintain a little genetic diversity in the worm population. Rather than treating all horses all the time, we target the ones that are shedding the most eggs. This maintains enough diversity in the worm population that there's always a mix of worms that are susceptible to the drugs (and not just resistant worms). Thus we are not creating a worm population that has homogenous characteristic of resistance."

"This is a switch in our thinking. Rather than viewing worms as agents of disease in the horse, we are thinking about the worms themselves as organisms in the environment and the importance of maintaining diversity. We put more importance now on doing fecal egg counts to see which animals are shedding the eggs, and which ones are shedding the most eggs into the environment. Then we can target those specific animals rather than treat all the animals," he adds.

"We do have some drug resistance in small strongyles to pyrantel and benzimidazoles, but we don't see any resistance yet to the macrocyclic lactones like ivermectin and moxidectin. But if it ever does occur, we have no more alternatives. So this is a change in our philosophy, rethinking how we go about managing these parasites in the horse," he continues.

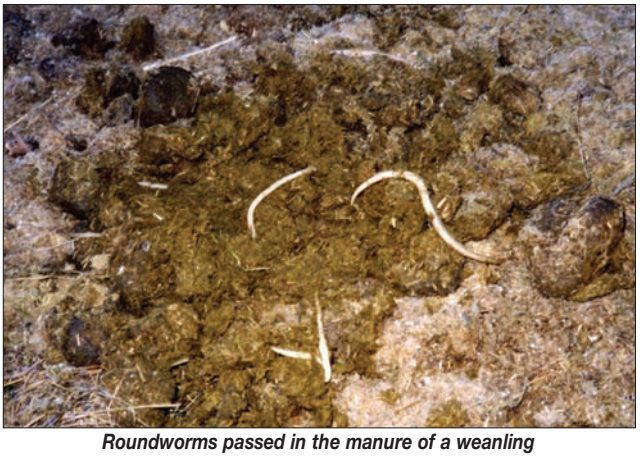
If we continually try to keep every horse worm-free, our horses never get an opportunity to develop some natural immunity. If we have a population of horses with no prior exposure to worms, they would be very vulnerable. "In the past, when animals have been on Strongid C, the daily dewormer, and then suddenly withdrawn from that and allowed to become infected, they became clinically ill because they had never built up a natural immunity," he says.

Roundworms (Ascridas)

Once horses get past the first year of life (the crucial time for controlling roundworms), they can be managed a little differently, allowing them to get some exposure and infection to small strongyles, to develop some immunity. But as foals, they need diligent deworming for roundworms. "This is the most important parasite in young horses. For those, treatment with pyrantel at two, four, six and eight months, to remove worm burdens, is crucial," says Faulkner. Foals can pick up a high number of these worms in a short time, if they live in pastures where foals have lived in previous years. Roundworm eggs are hardy and can survive in the environment for many years.

"The damage that occurs as those worms grow swiftly in the gut can be serious. The worms can grow faster than the intestine, and actually rupture the intestine. If the horse is young enough (with a very small intestine) when he develops a heavy worm load there is not enough space to accommodate the worms. Pyrantel works well in that age group, when you are targeting roundworms. Then, as the foal gets older, you can switch to macrocyclic lactones to control small strongyles," he explains.

Horses at pasture (at risk for picking up worm larvae)



Roundworms passed in the manure of a weanling

Bots

"Most people treat for bots because they look ugly. When you see the picture in the drug handout, showing the grubs in the stomach, it looks horrible. There are also close-up shots of the lesions where the larvae dropped off. But if you do histopaths (and staining) of these tissues you won't find much inflammation associated with them," he says. It's only a rare horse that has a real problem with bots.

"I think horse owners treat bots largely because they are visible. Bots in the stomach ordinarily don't do that much damage," he says. In reality they are more a nuisance when the adult flies are trying to lay eggs on the horse's hair coat, irritating and annoying the animals and causing them to strike out with front feet or run away from the flies (creating more danger to the horse handler). If you have neighbors who don't control their bots, there's no way you can eliminate the adult flies that are bothering your horses.

Pinworms

These worms are more of a cosmetic issue (due to tail rubbing from the itching and irritation they cause) than a health issue. "If you are showing horses, however, this is a problem, since you don't want the tail rubbed out. It also becomes an issue regarding spread to other horses. Pinworms are easily transmitted among horses. If you are running a boarding facility and all your clients' horses end up with pinworms, no one would want to board their horses there. So they do have some importance," he says.

"What's interesting to me is that we are starting to see some drug resistance to pinworms. It's a difficult thing to determine definitively but it looks like there are some isolated cases of drug resistance developing," says Faulkner. "This may be due to the fact we're not doing all the environmental things necessary to remove the worms and we're just trying to control them with drugs."

Any time we neglect the environmental factors and the things we need to do to halt transmission and just throw drugs at them, then drug resistance is an inevitable outcome. "The drugs we have available are quite effective and very good therapeutic tools for managing parasitic infection, but they should never replace proper husbandry. Any time you rely on drugs to do the job you should be doing with environmental management (clean habitat, clean feed, good ration), you are asking for trouble," he says.

Tapeworms

This issue is very complex. Anoplocephala perfoliata has been associated with colic, inflammation at the ileocecal valve and intussusception (telescoping of the small intestine, and blockage). "So tapeworms do have importance as a health issue. But it's important to understand what the risks are, for tapeworms, in our individual herds, rather than adopting the idea that all horses everywhere are at risk and should be treated once a year for a parasite that may or may not be in our pastures," he says.

"The difficulty with this parasite is that the only reliable way to know your horse has tapeworms is when you see the tapeworm eggs in the stool, and that test is not very sensitive, so it is very hard to diagnose tapeworms. This is why a serologic test has been developed," says Faulkner.

Most people don't look at their pasture conditions to see if they are supporting the mites that are intermediate hosts for the tapeworm. "I'm not sure that all pastures are equal in their ability to support the mite populations, or support those mite populations at levels that are consistent with transmitting the parasite. There are a number of ecological conditions that have to be met, for the tapeworm infection cycle to occur," he says.

We are still learning about tapeworms. "Part of the reason people haven't paid a lot of attention to tapeworms (since we've known about tapeworms in horses for many years) is that up until recently they were not thought to cause much problem. When I was in graduate school, the idea that Anoplocephala perfoliata could be an agent in colic and other inflammatory bowel diseases in horses was not universally accepted and I was led to believe that a lot of that evidence was circumstantial. However, in the 15 or more years since then, the accumulating evidence is more compelling that this tapeworm is associated with health problems in horses and that we maybe should take this seriously. But this perspective has only emerged due to accumulating enough examples where this association seems to be valid," says Faulker.

"Yet I am not sure that every horse needs to be treated for tapeworms once or twice a year, whether they need it or not. Horse owners need to work closely with their veterinarians and give thought to what the risks are for parasitic disease in their situation. If you have two mature horses on 10 or 15 acres and they don't go anywhere, and there are no other horses coming and going, your risk for parasitic disease is very low. But if your horses are out showing or trail riding and interacting with many other horses with different health histories and different management and parasite protocol, your risk is higher. Some of those horses may be parasite egg shedders. If you are running a boarding facility and clients with horses from many backgrounds and different deworming schedules, and some that are not on any schedule, then the risk is quite high," he explains. "People need to work with their veterinarian and tailor their deworming program to the risk for their own horses and situation. There is no one size fits all programs to follow blindly."

Deworming