Diagnosis of Liver Fluke Infection in Cattle

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A Diagnostic Review

The Parasite

*Fasciola hepatica*, the common liver fluke, is the most likely cause of liver fluke disease in domestic ruminants in the United States. The fluke life cycle requires a snail intermediate host to complete transmission to a new ruminant host. The parasite is most often found in Florida, along the Gulf Coast, in the Pacific Northwest, in portions of the Rocky Mountains, and Hawaii. Other areas, such as Oklahoma, Nebraska and Kansas, have reported local cattle with fluke disease. This suggests liver flukes are expanding their range.

Diagnosis - Examination of the Liver

Diagnosis of liver flukes in cattle is a challenge. The most direct technique is liver examination at slaughter or necropsy. While this method can provide information about the status of liver flukes on a particular property, it does not evaluate annual variations of infection level or lend itself to use with arriving feedlot cattle from unknown origins.

Diagnosis - Fecal Exam

Cattle from these areas could be infected with liver flukes
Another diagnostic procedure is fecal examination for *F. hepatica* eggs.

Two points need to be kept in mind when interpreting fecal exam results for *F. hepatica*:

a) The prepatent period for *F. hepatica* is 2-3 months. As a result, fluke eggs cannot be demonstrated early in the infection. A group of cattle could be carrying a high burden of young flukes, but no fluke eggs would show up in their manure.

b) The quantitative value of fluke egg counts is questionable. Fluke eggs pool in the gallbladder and intermittently pass into the feces. The fluke egg count on any given day often has little relationship to the number of flukes in the liver. An animal with a negative fecal could be parasitized, whereas a high fecal fluke egg count could just be a high number of eggs leaving the gallbladder that day, rather than a large fluke burden.

**Fecal Examination Techniques**

Fecal examination for fluke eggs requires use of fecal sedimentation, formalin-ether, or FLUKEFINDER® techniques. Commonly used flotation procedures open the operculum and sink the fluke egg rather than floating it for surface detection. The FLUKEFINDER screen system has the advantages of being faster and simpler than other techniques and it requires no chemicals. The FLUKEFINDER may also be used in the field for evaluation of arriving cattle. In monitoring liver fluke infections, it is critical to remember that the fecal exam techniques most frequently used for nematodes will not demonstrate fluke eggs.

**Fluke Egg Seasonality**

Seasonality of new liver fluke infections also affects the time of year that fecal exams can be expected to show fluke eggs. In an Idaho study, calves picked up an increasing number of flukes as the pasture season progressed. Transmission peaked in November. With the 2-3 month prepatent period, the majority of fecals wouldn't be positive until December or later. Fecal exams for flukes at the typical processing time of October would miss immature fluke infections in Northwest calves.

In Louisiana, the Gulf Coast transmission pattern for flukes has been demonstrated to be primarily February-July. Allowing for the prepatent period, fecals start to show positive for fluke eggs 2-3 months after the peak transmission times.

**Disease Signs**

The signs caused by liver flukes in cattle range over the following syndromes:

a) chronic disease with anemia, bottle jaw and overall
unthriftiness.
b) subacute disease with anemia, hemorrhage and death in 7-10 weeks.
c) acute death.
d) subclinical disease with no clinical signs.

**Treatment Considerations**
The economic impact of *F. hepatica* has been documented in several publications. The financial losses are stimulation for accurate evaluation of a herd or group of cattle. Consideration of the cow's role as a source of fluke infection for their calves is also necessary. In a study of beef cows from the western United States, 19.2% of the cows showed evidence of liver fluke infection at slaughter. Cows infected with liver flukes are a prime source of pasture contamination. Flukicide use in cows may help control pasture contamination with liver fluke eggs.

In farm and ranch situations, a veterinarian can evaluate past years' experience, fecal exams, and liver checks from cattle slaughtered or necropsied on the farm, in order to decide on flukicide use. A feedlot veterinarian would seldom have this much information to base flukicide use on. Current livestock transportation services easily move cattle from fluke endemic areas to feedlots in any part of the United States. If the origin of incoming feedlot cattle is known, liver fluke prevalence in the area of origin can be researched. If cattle are purchased from the same source over a period of years, past liver condemnation rates for fluke infection can be examined. The FLUKEFINDER system can also be used to check fecals of arriving cattle for fluke eggs.

Accurate data regarding the fluke status of acquired cattle are often lacking. In this case, timing of treatments should follow this rationale:

- **Cows** can be treated at any time of year, since they have had several seasons to acquire liver flukes.

- **Northern calves** should be treated for flukes as late in the fall as possible. Late fall treatment allows the maximum number of flukes in the calves to mature into adult flukes, which are most easily killed.

- **Southeastern calves** should ideally be treated for flukes beginning in September. This allows the last fluke picked up in June or early July to mature and be easily killed.

- **Feedlot animals** should be treated at entry. This provides the best insurance against losses from flukes when the fluke status of arriving cattle is unknown.

**Flukicides**
Two formulations of cattle flukicides are marketed by Merial in the United States. CURATREM® (clorsulon) drench is available to treat both mature
and immature flukes. IVOMEC® Plus (ivermectin and clorsulon) Injection treats sucking lice, mange mites, grubs, and nematode parasites plus mature liver flukes. These products provide the outstanding parasite control of ivermectin plus the added insurance of fluke control.

References


