

Liver Fluke

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Importance of Liver Fluke

- Poor condition, ill-thrift, reduced scanning rates
 - Liver condemnation
 - Immunosuppression
 - Death
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- Costs of prevention and treatment
 - Costs of related diseases



Incidence/Prevalence

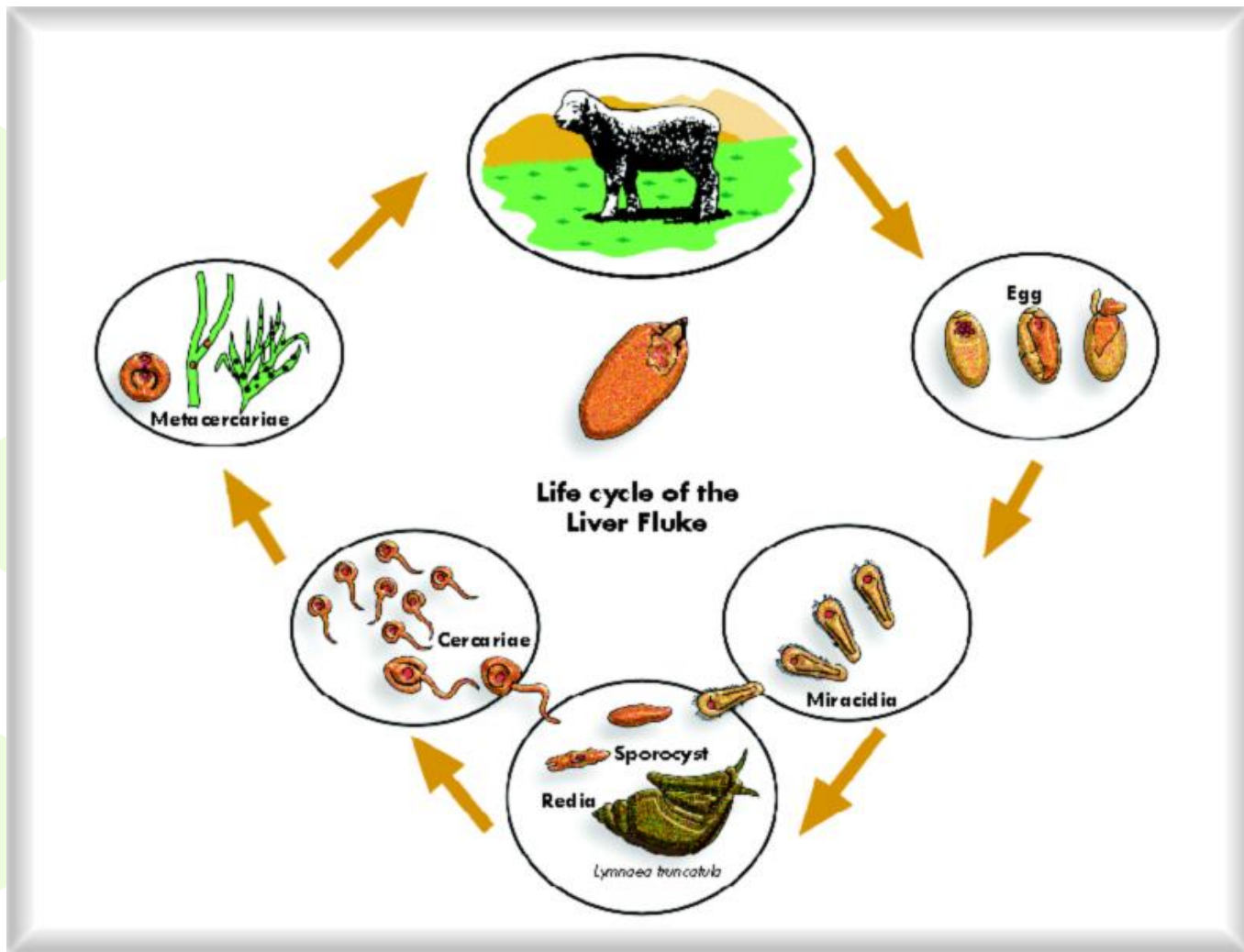
- Overall increasing over past few decades
- Traditionally more of a problem in the West – moving East
 - Climate
 - Trade of animals
 - Snails on birds' feet

Fluke Requirements

- 2 hosts:
 - MUD SNAIL (*Galba truncatula*)
 - GRAZING ANIMAL (cattle, sheep, deer, rabbits...)
 - Disease is most pathogenic in sheep



Life Cycle



Types of Disease

- Acute fluke
 - Sudden death, prior to symptoms developing
 - Large number of immature fluke tunnel through the liver → results in liver haemorrhage



- Sub-acute fluke
 - 5-8 weeks following initial infection
 - Migration of immature fluke through the liver
 - Inappetent, depressed
 - Dec onwards
- Chronic fluke
 - At least 8 weeks following initial infection
 - Mature fluke in liver and gall bladder
 - Ill-thriven, anaemic, poor fleece, bottle-jaw



Sheep vs Cattle

- Cattle more resistant to effects of fluke
 - Cattle – mainly chronic
 - Sheep – all stages
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- Effect on condition, productivity and welfare important in both species



Environmental Factors

- Temperature
- Precipitation
- Availability of snail habitat
- Snail breeding
- Mild winters

$\geq 10^{\circ}\text{C}$



Diagnostics

- Post-mortem
- Dung samples
 - Faecal egg counts
 - Coproantigen ELISA
- ELISA
 - Milk/blood
- Part of Animal Health Plan



Treatment Considerations

- Time of year
- Previous seasons' weather
- Grazing history
- Worming also required?
- Withdrawal period
- Timing of housing
- Previously used products, efficacy of them
- Quarantine treatment



Flukicides

- Adulticides
 - Kill only adult fluke (10-12wo)
 - Late spring
 - Albendazole (Endospec, Albex) – high doses
 - Oxyclosanide (Zanil)
- Immature
 - Kill fluke from 6wo
 - 6-8 weeks after housing; part-way through winter; where TBZ resistance
 - Closantel (eg Flukiver, supaverm (combined with wormer))
 - Nitroxynil (Trodax)

- Triclabendazole
 - Kills fluke from 2do
 - Oct-Jan (time of maximum challenge)
 - E.g. Endofluke, Tribex, Fasinex, Combinex (combined with wormer)
 - Resistance
 - Some or all of the fluke are not killed
 - Hereditary between fluke
 - Incidence increasing
 - Diagnosis

Flukicides

- No flukicide is long-acting
- Known fluke risk: treat Oct, Jan, May
- High risk year/farm + 6 weeks after Oct and Jan treatments
- Beef cattle – appropriate interval after housing vs. at housing in wet years
- Discuss product choice with your vet!

Fluke Control

- Animal welfare
- Productivity
- Management
 - Fencing-off natural watercourses and stagnant water
 - Keep stock off flood-prone land in autumn/winter
 - Improve drainage
 - Quarantine bought-in stock
 - Check for TBZ resistance



What about the future?

- Research into vaccine vs fluke
- ? Snail control – molluscicides – environmental implications
- New tests – PCR that can detect infection from 2wo
- Climate change
- ? New products



Take Home Messages

- Effective testing programme → diagnosis
- Use the most appropriate product for the time of year and the individual farm
- Treatment protocol needs to be adjustable depending on conditions and prevalence of fluke each year
- Fluke forecast www.nadis.org.uk
- Investigate losses
- Discuss with your vets when unsure!

Vaccination pre-calving/-lambing

- Timing (too late worse than too soon)
- Storage
- Clostridial vaccines
 - Booster 4-6wks pre-lambing (varies with vaccine)
 - Consider 2 sessions if early and late groups
 - COLOSTRUM
- Rotavirus, Coronavirus, E. coli
 - Protection for calf
 - 12-3wks pre-calving for Rotavec
 - COLOSTRUM

Worming

- Avoid susceptible animals grazing heavily contaminated ground
- Provide low challenge grazing for high risk animals
- Tailored protocol required for each farm
- FEC – collect samples from 6 individuals from each group
- Targeted worming
- One size doesn't fit all

Blood Profiling

- 3wks pre-lambing
 - Random selection of twins and triplets
 - Energy – BOHB
 - Protein – BUN, albumin
 - Magnesium/Calcium
 - Copper
 - Sample pre-concentrate feeding or ≥ 4 h after.
- 75% of lamb foetal growth occurs in last 6wks of pregnancy
- Undernutrition in 3rd trimester
 - Reduced birthweights
 - Inadequate colostrum