

16th International Conference of the World Association for the
Advancement of Veterinary Parasitology

Veterinary Parasitology into the 21st Century



PROGRAMME AND ABSTRACTS

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Toxoplasma gondii, *Neospora caninum*, and certain species of *Sarcocystis* are apicomplexans known to cause abortion and neonatal mortality in livestock. The structure of the parasite, serological examination, detection of parasite DNA, immunohistochemical tests, or sometimes a combination of these, are needed for a definitive diagnosis. *T. gondii* and *N. caninum* tachyzoites are similar but their tissue cysts can be distinguished; *N. caninum* tissue cyst walls are 1-4 µm thick whereas the cyst wall of *T. gondii* is <1.0 µm thick. Serological examination of the dam is not diagnostic for abortion due to toxoplasmosis, neosporosis or sarcocystosis because of high prevalence of these parasites in the general population. Finding antibody to *T. gondii* or *N. caninum* in fetal fluid is diagnostic whereas a negative result is not; thus, not finding antibody does not rule out infection. Immunohistochemical tests using specific sera is the most practical method at the present time to detect parasites in fetal tissues. Specific primers are available to distinguish *N. caninum* from *T. gondii* by polymerase chain reaction (PCR). *Sarcocystis* organisms in fetal tissues can be distinguished by their structure, even by the light microscope. At present there are no reliable serological tests for the diagnosis of *Sarcocystis*-associated abortion.

The forming of strongylids' community and cumulation in the host effect of parasites of equids

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The study of patterns of forming of strongylids' community in horses opens the possibility to understand the nature of stability of host-parasite systems and mechanisms of their functioning.

Evaluating the strongylids' community from the position of evolutionary parasitology gives basis to state that connections between strongylids and their hosts were formed and intensified as portion of grasses in the nutrition of equids was raised. These connections completely were formed at the time obligatory grassing Equidae appeared.

The sequence of horses invasion by cyathostomes and strongylids reflects with high probability evolution steps of forming of their community.

The comparison of phylogeny of equids and strongylids gives reason to say that taxonomic and ecological structure of the community reflects with some approximation the history of relationship of hosts and their parasites on the last step of their coevolution. At the time Equidae were occupying the steppe ecosystems, ecological close, concurrent species of hosts were connected as symbiotic systems. That was reason for host cumulating of parasites.

This process was repeated: during the supplanting of *Hipparion* by unidactyl horses most parasite systems became extinct. However at the phylogenetic branch of contemporary horses the cumulation is reflected in high degree: there are more than 65 species and 21 genus that have passed a long evolution way from different taxons of equids.

The gathering of close relative species of strongylids in large gut of horses was reason of strengthening of significance of these parasites for regulation of host population.

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The wild boars have always been the source of human trichinellosis in the Slovak Republic. Therefore wild boars and red foxes were studied for their role in the maintenance of the sylvatic cycle of trichinellosis. The muscles were examined by a digestion method for the presence of *Trichinella* larvae. Serum from wild boars and thoracic transudate from red foxes were examined by ELISA for the presence of anti-*Trichinella* antibodies. *Trichinella* spp. larvae were most frequently detected in *Ursus arctos* (20%), *Canis lupus* (7.1%) and *Vulpes vulpes* (3.2%). Other wild and domestic carnivores examined were found negative. Of wild carnivores, fox is the only animal occurring over the entire territory. Therefore 1349 samples were examined from foxes shot in 1994-1996 to check the efficacy of antirabic vaccination. Anti-*Trichinella* antibodies were detected in 25.9% of the foxes examined. In the years 1954-1956 no trichinellosis was detected in wild boars. Currently, 0.22% of wild boars examined by a digestion method were diagnosed with trichinellosis on the average. The prevalence of trichinellosis fluctuated over those years from 0.06% to 0.45%. Trichinellosis was serologically diagnosed in as many as 15.9% of wild boars. From the epidemiological point of view, trichinellosis in the Slovak Republic circulates among wild boars or red foxes in 32 districts of 37 and only 5 districts are trichinellosis-free. This wildlife, occurring over the entire territory, is the major maintainer of the natural sylvatic cycle of trichinellosis in the Slovak Republic.

The review of unresolved problems of taxonomy of Strongylidae of horses

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Almost 100 years ago the study of taxonomy of strongylids of horses was founded by A. Looss. At the present time more than 60 species are described, some large revisions were made. Nevertheless the number of questions is still need studying.

Different points of view on relations ancestor-descendant between Cyathostominae and Strongylinae are existed. This question is general for all Strongyloidea - what shape of buccal capsule - round or cylindrical - is the plesiomorphic character?

Though the opinion about Cyathostominae of horses as monophyletic taxon is generally accepted, phylogenetic relations between Cyathostominae and Strongylinae of horses and such helminths of other hosts ought to analyze once more. It is very tempting to pick the group of parasites of one host out to separate taxon. Strongylinae genera *Triodontophorus*, *Craterostomum* and possibly *Bidentostomum* having round buccal capsule, the same life cycle and morphology of IV stage larvae are very similar to Cyathostominae. So the possibility of addition this group to the latter was discovered by A. Railliet (1923) many years ago.

Cyathostominae is a good illustration for unification and dividing approaches in taxonomy. According to different authors here is from 10 to 14 genera accounted. The separation of genera *Coronocyclus* from *Cyathostomum* is acknowledged yet. The authors concerned that genera *Cylicotetrapedon*, *Skryabinodontus*, *Tridentofundibulum* and also *Parapoteriastomon* should be concerned like separate genera. Unification the former these genera with *Cylicostephanus* and the latter with *Cylicodontophorus* is only the contribution to tradition.

Last years some new species of strongylids of horses were described. Following our experience Asia and Africa have perspectives in this respect. At the same time genus *Cylindropharynx* and species were described by Ricci (1939) from zebras are needed the redescription.

The authors suppose that studying of morphology of larvae stages of strongylids of horses and other hosts and analysis of their DNA with following working up of results by methods of characteristics could be promoted in solution of these problems.