Thelohanellus nikolskii in imported fingerlings of common carp (Cyprinus carpio) in the Czech Republic - a case report

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Abstract

Examination of common carp (Cyprinus carpio) fingerlings with a total length of between 5 and 6 cm, revealed the presence of small cysts on the fins. Cyst-like structures were visible to the naked eye on the dorsal and anal fin and measured 1 – 2 mm in diameter. The cysts were very firm, pigmented and integrated between the fin rays. Cysts measured from 500 to 600 µm and melanophors and xanthophors were detected with microscopy of the fresh mounts. Pyriform spores were seen in the tissue surrounding compressed cysts. Spores measured 17x10 µm and had one apical polar capsule with polar filament. Histopathology revealed polysporic myxosporean plasmodia measuring 620 x 500 µm in the diameter. The morphology of the plasmodia and spores, together with localization are specific for the infection of myxosporean parasite Thelohanellus nikolskii.

The myxozoan Thelohanellus nikolskii Akhmerov, 1960 (syn. T. cyprini Hoshina & Hosoda, 1957) is a parasite which infects fingerlings of common carp. This parasite forms numerous round cyst (i.e. cyst-like plasmodia) up to 2 mm in diameter in close association with cartilaginous fin rays and possibly scales (Moshu & Molnar, 1997). Spores are ellipsoid, thick walled and measure 17.0 x 10.4 µm. The polar filament is arranged in a double coil with 8 turns in the outer and 1 or 2 turns in the inner coil (Lom & Dykova, 1992). Thelohanellus nikolskii arrived in Europe with grass carp (Ctenopharyngodon idella) from the Far East (Molnar, 1982). The cysts usually appear on the fish at the beginning of July, and in August and September contain mature spores (Molnar, 1982; Trombitskii et al., 1990). Thelohanellus nikolskii infects koi carp with lower prevalence and has not been reported in the goldfish (Carassius auratus) (Molnar, 2002). The cysts of T. nikolskii are easily seen by the naked eye and are surrounded by a thick capsule composed of connective tissue strengthened by cartilaginous elements (Molnar, 1982).

The routine veterinary examination of common carp (Cyprinus carpio) fingerlings of length 5 – 6 cm, revealed small cysts on the fins. The fish were imported from Hungary at the end of July 2005 to the Moravian fishery. The carps were kept at 20°C in a quarantine tank which measured 0.2 ha. The fish were
necropsied and the samples for histopathological examination were fixed in 10% buffered formalin.

The cysts were observed on the dorsal and anal fin and measured 1 – 2 mm. The cysts were very firm, pigmented and integrated with cartilaginous tissue of the fin rays (Figure 1). Cysts measured from 500 to 2000 µm with the capsule. Melanophors and xanthophors were detected by microscopy of the fresh mounts (Figure 2). Pyriform spores were seen in the surround of compressed cysts. Spores measured 17x10 µm and had one apical polar capsule with polar filament (Figure 3). Histopathology revealed polysporic myxosporean plasmodia with a plasmodial wall composed of connective tissue with cartilaginous areas. The wall of some plasmodia was composed only of cartilage (Figure 4). Solitary melanophores were seen in the connective tissue between plasmodia.

The morphology of the plasmodia and spores together with the localization are specific for infection with *Thelohanellus nikolskii*. There is no data concerning this infection in common carp in the Czech Republic in the last 20 years. It is obvious that the fish was infected in the
country of origin. Imported fingerlings of common carp were euthanised and quarantine tanks cleared. Risk of spreading imported parasites should be minimizing by the effective use of quarantine procedures.

References

Molnar K (2002). Differences between the European carp (Cyprinus carpio carpio) and the coloured carp (Cyprinus carpio haematopterus) in susceptibility to Thelohanellus nikolskii (Myxosporea) infection. Acta Veterinaria Hungarica 50, 51-57.

