



SCAHLs Aquatic (formerly NAAH-TWG) Slide of the Quarter (October – December 2009) Case 09-60470: Barramundi (*Lates calcarifer*) with ichthyobodosis (with a moderate epitheliocystis infection)

Case History

Low-level mortalities of barramundi fry in a freshwater tank nursery system were reported. The fry had been stocked in the nursery two weeks earlier. The mortalities had started in the three tanks that contained the smallest fish (25-30 mm total length) while the rest of the tanks containing >50 mm total length fish were normal. Affected fry were thin and some exhibited abnormal swimming. Live diseased fry were euthanized, preserved in Bouin's solution then processed as longitudinal sections of entire fish.

Histopathology

The gills show a marked, extensive lamellar and filament epithelial hyperplasia and hypertrophy with focal to diffuse synechiae formation (fusion of adjacent gill lamellae) - see Figure A. Focal to diffuse spongiosis is apparent in hyperplastic gill epithelium, particularly within the occasional papillae-like projections into the branchial cavity - see Figure B.

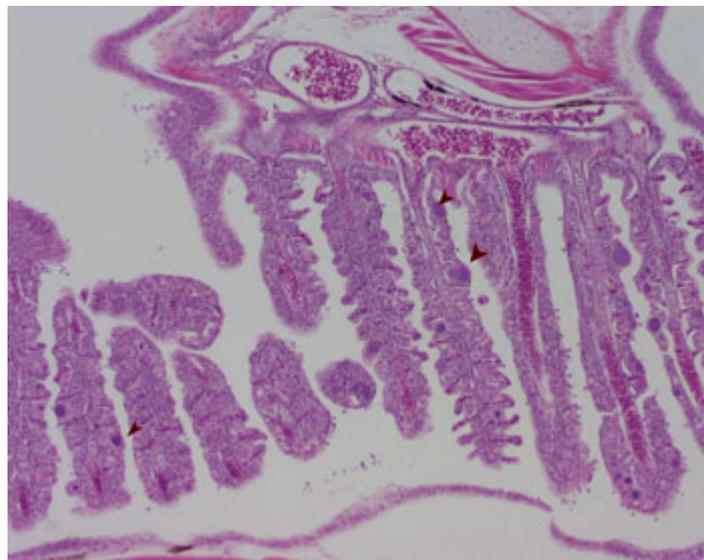


Figure A

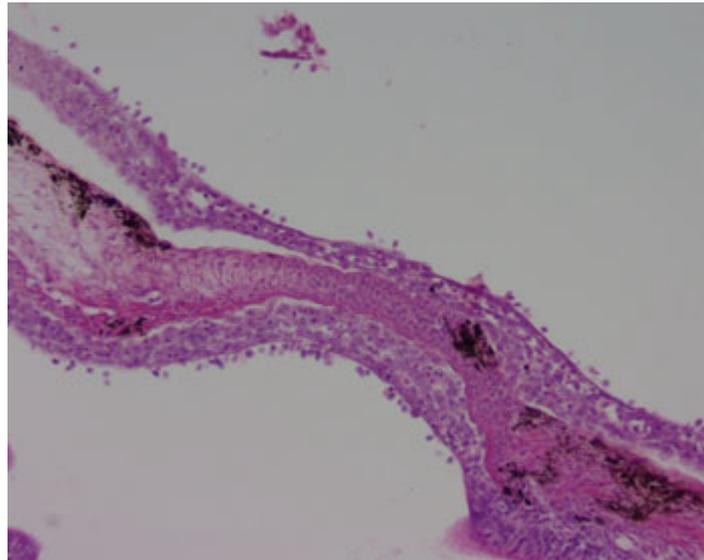


Figure B

A scattered cell necrosis is present within the papillae-like projections and elsewhere in the gill epithelium. There are numerous small protozoan parasites attached to the gill epithelium, and to the epithelium of the branchial and oral cavities - see Figure C. These ~7µm long, pear-shaped protozoa, when attached to an epithelial cell, are consistent with *Ichthyobodo necator*. There are also scattered epitheliocystis cysts of various sizes in moderate numbers in gill epithelium (see the arrowheads in Figure A).

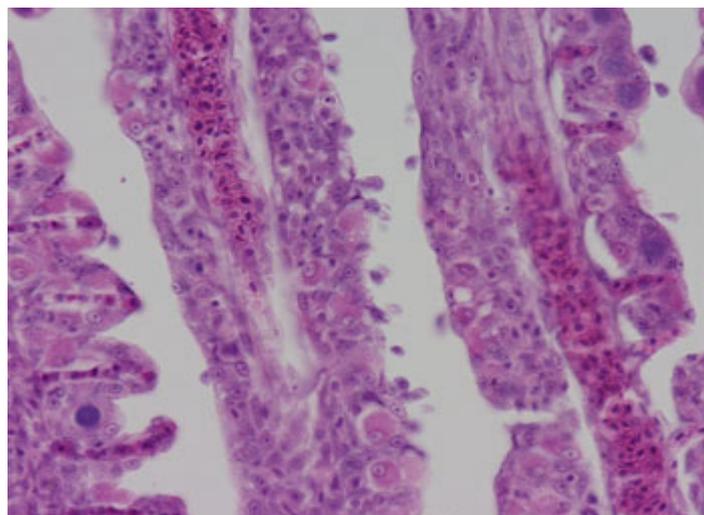


Figure C

Numerous *Ichthyobodo necator* are also attached to the epidermis. Similar to the epithelium of the branchial cavity and oral cavity, the epidermis has a



mild, scattered hyperplasia and mild, multifocal epidermal spongiosis with rare malphigian cell necrosis.

Morphological diagnosis

Chronic, severe, extensive hyperplasia and hypertrophy of gill lamellar and filament epithelium associated with infection by a protozoan parasite with accompanying scattered epitheliocystis cysts.

Aetiological diagnosis

Ichthyobodosis with a moderate epitheliocystis infection.

Comment

The flagellate protozoan *Ichthyodobo necator* is a ubiquitous ectoparasite of freshwater fishes around the world. Typically ichthyobodosis is seen when there are high stocking densities and minimal water exchange, eg. in aquariums and tanks.

The parasite spreads by the free-swimming stage and it has a high reproductive capacity. It attaches to an epithelial cells and feeds directly from the cell cytoplasm via microtubules associated with its cytostome.

In young fish the infection tends to cause gill disease with an increased cell mucus production then epithelial hyperplasia, resulting in respiratory impairment and the clinical sign of anorexia. In older fish, ichthyobodosis is a skin condition with the signs of skin irritation, dull opaque spots on the skin which progress to a continuous grey-bluish film over the skin and skin ulceration. We diagnose ichthyobodosis in barramundi sporadically, always in young fry in freshwater tank nursery systems.

Epitheliocystis, a chlamydia or rickettsia-like infection of epithelial cells, is usually benign and an incidental finding when barramundi gills are examined histologically. Clinical disease is rare; we have recorded two cases in barramundi fry during the last 20 years and then only when there were such high numbers of epitheliocystis cysts that the entire respiratory surface was obscured.