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D. Red or bloody patches on the skin and ulcers: (Ill. 22-25)

The red bloody patches on the skin and ulcers are usually caused by bacteria. In some cases this bacterial infection occurs after a parasitic infection. Another possible cause is viral infections. An accurate diagnosis is necessary to determine the appropriate treatment.



22 • *L-18 Baryancistrus 'golden nugget'*
Red patches on skin: Ancistrus with red patches on the belly and mouth caused by Bacterial infection.



23 • *Carassius auratus 'Sarasa'*
Red ulcer: Sarasa with an ulcer caused by Bacterial (*Aeromonas*) infection.



24 • *Pterophyllum 'atum Peru'*
Red ulcer: Angelfish with red ulcer caused by *Ichthyobodo*, *Spironucleus* and Bacterial infection.



25 • *Corydoras haraldschultzei*
Red bleeding of skin: Corydoras with small red patches on belly + reddish gill cover caused by Bacterial and Worm Metacercaria infection.

E. Holes/pits/craters: (Ill. 26-29)

These are often caused by poor nutrition, poor breeding and poor water quality. In some cases, there is a bacterial infection caused by poor care of the fish, e.g., with Malawi or Tanganyika Cichlids (in conjunction with so-called Malawi Bloat). The first symptom may be a white patch on the skin that later develops into a pit and/or crater. Attention: not to be confused with an ulcer, which occurs with red bloody patches on the skin (see above).



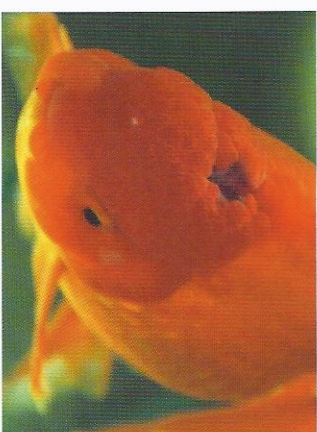
26 • *Symphysodon aequifasciatus*
Holes/Cavities/Small Craters: Discus with holes and cavities in the body caused by parasitic (*Tetrahymena*) infection.



28 • *Symphysodon aequifasciatus*
Holes/Cavities/Small Craters: Discus with Hole-in-the-Head Syndrome and damaged fins.



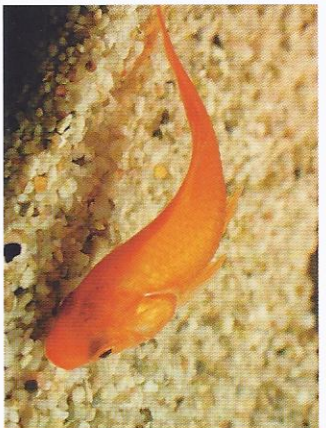
27 • *Microgeophagus ramirezi*
Holes/Cavities/Small Craters: Dwarf Cichlid with Hole-in-the-Head caused by Bacterial (fishMB) and *Spironucleus* infection.



29 • *Carassius auratus 'Oranda'*
Holes/Cavities/Small Craters: Oranda with a hole in his head caused by bacterial infection.



130 • *Carassius auratus* 'Oranda Fantail'
Parasitic infection: Fantail Goldfish with extra mucus secretion on the head caused by *Chilodonella* infection.



131 • *Carassius auratus* 'Goldfish'
2 Parasitic infections: Skinny Goldfish with raised gill cover caused by *Chilodonella* and Gill Fluke infection.



133 • *Helostoma temminckii*
3 Parasitic infections: Emaciated Kissing Gourami with *Chilodonella* in the gills and *Spiranucleus* + Nematode infection in intestine.



134 • *Poecilia reticulata* 'Guppy'
Parasitic infection: Guppy with white head and white mouth caused by necrosis of skin due to *Tetrahymena* parasites.

c. *Chilodonella*: (Ill. 130-133)

Some species are not harmful to fish, but *Chilodonella piscicola* can cause serious infections.

If they are present in small numbers, they are harmless. In overcrowded or contaminated aquariums, however, they usually cause severe infections.

The infection can only be determined by microscopic examination.

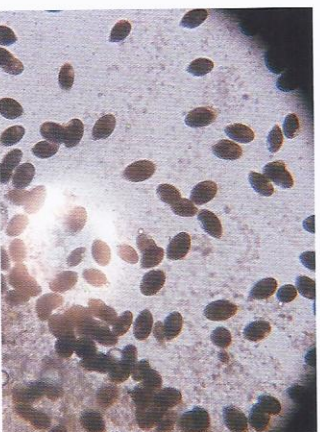
Chilodonella resembles *Tetrahymena* (see p. 47) but can be recognised by the rows of cilia, the flat oval shape and the typical rotary circular swimming movements. (size: 30-70µm, see figure).

This parasite usually occurs on the gills and slowly rotates on the gill lamellae.

This parasite is mainly found inside the gills, so there are not many external signs, except that the fish show breathing difficulties and an open gill cover, and will eventually die as a result of damaged gills.

There may also be excess mucus on the head and the gill covers.

TREATMENT: First improve the water quality. A water change will prove very helpful. The best medicine is an anti-parasitic medicine from the shop or FMC, but also Formalin, Copper Sulphate and salt. In most cases, an anti-bacterial drug will have to be used as well.



135 • *Tetrahymena*
Microscopic Examination: Several *Tetrahymena* with their typical pear shape structure. (200 x)



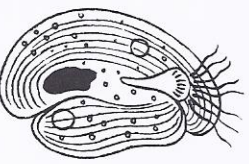
136 • *Poecilia reticulata* 'Guppy'
Parasitic + Bacterial infection: Guppy with red wound caused by *Tetrahymena* and fluke caused by Bacterial infection.

d. *Tetrahymena*: (Ill. 134-138)

Tetrahymena can be recognised under the microscope by the numerous rows of cilia, the pear shape and the rapid forward (as opposed to circular) swimming movements (size: 20 to 30 µm).

This parasite usually 'bores' its way into the tissue and has a destructive effect on the surrounding tissue (usually skin and muscles).

It is also regularly found in Guppies, which is why it is also known as 'Guppy Disease'.



132 • *Chilodonella*
Microscopic Examination: Few *Chilodonella* moving and feeding around a gill filament. (200 x)

