

# DROPSY in ornamental fish: a review of my cases

Notes on my cases of generalised 'dropsy' with raised scales (1995-2025). **Key points**

**Terminology:** 'dropsy' with raised scales should be more correctly described as skin oedema, cutaneous oedema or dermal oedema since the scales are located within pockets in the dermis and covered by the epidermis. It is not a disease in itself, but a clinical sign or descriptive term. The generalised nature of this clinical sign is also a reflection of similar fluid build-up in other tissues.

**General:** despite being a not uncommon sign, details in the scientific literature are minimal, and describe the tissue changes as dilatation of the dermal lymphatics and scale pockets with tissue fluid, vascular dilatation, and occasional capillary rupture. In severe cases, free fluid also accumulates within the body cavity and retrobulbar space. It is often a sign of ongoing disease processes affecting various internal organs, such as the heart, liver, kidneys or gills. The underlying disease can be caused by infectious (bacteria, parasites, viruses & fungi) and non-infectious processes such as tumours, toxins, nutritional deficiency, and environmental factors. Only freshwater fish tend to be affected.

**Investigations:** identification of the cause in live fish is limited to a thorough clinical examination, skin and gill scrapes, radiography and ultrasonography. In some cases, bacteriology and blood tests may be useful. A response to antibiotic treatment may suggest a bacterial cause. However, a detailed necropsy with histopathology of all tissues is required to confirm the underlying cause.

## GOLDFISH (*Carassius auratus*)

**Number** (n=34): total cases examined = 34 over 30 year period = one per year

**Varieties:** 68% long-bodied (common, comet, shubunkin), 32% short-bodied (oranda, ranchu, veiltail)

**Environment:** 64% indoor tank, 36% outdoor pond

**Age** (yrs) where known (n=32): minimum 1yr, maximum 11yrs, mean 5.2yrs

**Duration** of signs before presentation: several days to several weeks, with occasional sudden onset

**Presentation:** all had raised scales, although in some, this developed with other signs such as varying degrees of body swelling (53%) or buoyancy disorders (38%). Exophthalmos was present in 47%, either unilateral (3/34) or bilateral (13/34).

**Degree** of oedema: this was assessed as +, ++ or +++ and represented 3%, 50% and 47%, respectively

**Radiography** (n=10): was performed in cases with buoyancy disorders and revealed changes to the size and position of the swim bladder chambers. Scale pockets were radiographically distended, and the tissues over the ribs were thickened due to increased tissue fluid, but radio-opacity of the body cavity with reduced tissue contrast complicated further interpretation in most cases.

**Ultrasound** (n=4): free fluid was found in the body cavity (3/4), polycystic kidneys confirmed (1/4)

*NB. The small number of cases was due to a lack of diagnostic expertise and scanner availability.*

**Response** to treatment (n=33): 13/33 were euthanised at first presentation due to the severity of disease, and the remaining 20/33 were given antibiotics by injection, in-food or in-water baths. Of these, 12 cases deteriorated and were euthanised or died within 2 weeks. Four cases (12%) got better or survived for more than 2 weeks. The remaining four cases were lost to follow-up.

**Histopathology** (n=14): revealed that some fish had one or more of the following: mycobacteria/granulomas (7/14), polycystic kidney disease (4/14), multi-organ inflammation (3/14), suspected toxin (2/14), renal tumour (1/14), renal myxozoan parasites (1/14).

### KOI (*Cyprinus carpio*)

**Number** (n=14): total cases examined = 14 over 30 year period = one every two years

**Age** (yrs) where known (n=7): minimum 1yr, maximum 18yrs, mean 8.4yrs

**Duration** of signs before presentation: several days to several weeks, with occasional sudden onset

**Presentation:** all 14 had raised scales, although in some, this developed with other signs such as varying degrees of body swelling (50%). Exophthalmos was present in 64%, either unilateral (3/14) or bilateral (6/14).

**Degree** of oedema: this was assessed as +, ++ or +++ and represented 0%, 57% and 43%, respectively

**Radiography** (n=3): was performed in cases with buoyancy disorders and revealed changes to the size and position of the swim bladder chambers. Scale pockets were radiographically distended, and the tissues over the ribs were thickened, but radio-opacity of the body cavity with reduced tissue contrast due to internal free fluid or tumours complicated interpretation in most cases.

*NB. The small number of cases was due to a lack of diagnostic expertise and use of equipment.*

**Response** to treatment (n=11): 6/11 were euthanised at first presentation due to the severity of disease, and the remaining 5/11 were given antibiotics by injection or in-food. Of these, three cases deteriorated and were euthanised or died within 2 weeks. One case (7%) got better or survived for more than 4 weeks after two injections of Baytril. The remaining case was lost to follow-up.

**Histopathology** (n=11): revealed that affected koi had one or more of the following: tumour within body cavity (5/11) with poorly differentiated cell types, multi-organ inflammation (4/11), renal myxozoan parasites (2/11), and ZN-positive granulomas (1/11).

### ORFE (*Leuciscus idus*)

One case of generalised skin oedema was seen in 30years. A 5yr-old male orfe developed oedema after jumping out of its pond. It lay on its side at the bottom of the pond, having sustained a mid-spinal fracture, and was euthanised following radiographic confirmation.

### OSCAR (*Astronotus ocellatus*)

A 3yr-old female oscar developed raised scales, swollen body cavity and bilateral exophthalmos. Due to her rapid clinical deterioration, she was euthanised on first presentation. Histological examination confirmed she had extensive renal degeneration and cardiac myopathy.

### CATFISH (*Heteropneustes fossilis*)

A mature female liver catfish, a species without scales, developed severe body swelling within a few days. Due to this rapid onset and clinical deterioration, she was euthanised on first presentation. Histological examination confirmed she had severe cardiac disease and renal tubule degeneration.

In the absence of any scientific literature, it is hoped this clinical review highlights the variety of underlying diseases and the poor response to treatment. It also shows the need for detailed examination and investigation to help identify the few cases that may respond to antibacterial treatment, but also emphasises the need for prompt euthanasia to prevent further suffering.