

Internal diseases of ornamental fish: a clinical approach

W. H. Wildgoose*

Midland Veterinary Surgery, 655 High Road, London E10 6RA, United Kingdom.

There are many diseases in ornamental fish that originate from the internal organs and which are rarely mentioned in the hobby or scientific literature. The lack of professional involvement and investigation, together with much anecdotal information and the irrational use of many proprietary medications, has done little to further our knowledge in this important area of fish health. Veterinarians are often asked to investigate these cases because the fish have a high emotional value and have failed to respond to the proprietary medicines. These cases allow veterinarians to use several professional skills and facilities which are commonly available in general practice and frequently used with terrestrial animals.

In this workshop a brief summary of routine diagnostic procedures was given to highlight some of the unique aspects of investigating ornamental fish health problems. The role of advanced diagnostic imaging techniques such as radiography and ultrasonography was emphasised and several case studies were used to illustrate the positive advantage of a non-lethal approach to internal disorders of fish. Both diagnostic and therapeutic aspects of cases commonly seen in veterinary practice were discussed.

Mouth deformity is often due to trauma and can restrict normal feeding activity: a novel corrective surgical procedure was briefly described. Foreign bodies such as gravel or other substrate can cause oral and gastric obstructions, and manual removal under anaesthesia may be required. Goldfish with retrobulbar granulomas and retinal pigment epithelial carcinomas were illustrated and the variable success of surgical enucleation was discussed with several participants.

Spinal deformity is common in orfe (*Leuciscus idus*) and their sleek body shape may predispose this species to spinal injury. Several possible causes such as genetic deformity, trauma, chemical toxicity, electrocution and nutritional deficiency were considered. Severe periosteal hyperplasia with proliferative bone changes affecting only the vertebrae in koi (*Cyprinus carpio*) is an unusual and rare disease but similar to hypervitaminosis A in cats, Paget's disease in humans and one of unknown aetiology affecting snakes. In fish, it is not known if this is due to bacterial infection, metabolic disorder or exposure to environmental toxins such as the herbicide, trifluralin but no myxosporeans were found histologically in one case that also had cardiomyopathy and glomerulonephritis.

Abdominal swelling is common in coldwater ornamental fish. The radiographic and ultrasonographic features of polycystic kidneys in goldfish (*Carassius auratus*) and

*Corresponding author's e-mail: whwildgoose@aol.com

abdominal carcinomas in koi were shown. Papillary cystadenoma of the collecting ducts in oscars (*Astronotus ocellatus*) is a common cause of abdominal swelling that result in deformation of the swim bladder and subsequent buoyancy disorders. The degree of deformation and radiographic appearance has varied substantially in the five cases examined by the author.

Buoyancy disorders are particularly common in some varieties of fancy goldfish and can be due to several terminal diseases. Abnormal buoyancy is exhibited by fish floating to the surface or sinking to the bottom when at rest or not actively swimming. This may be accompanied by abnormal pitch (*i.e.* head up or head down) or listing to one side or the other. In many cases it has a sudden onset and without any preceding traumatic event. Some cases may have been affected for several days or months before being presented for examination. Tumours, polycystic disease and large granulomatous lesions of the kidney can cause unilateral displacement of the swim bladder resulting in abnormal buoyancy. Over-inflation of the swim bladder can occur in fish with extensive granulomatous disease, particularly if the cranial cavity is affected. Fluid filling of the swim bladder has been associated with bacterial and fungal infection, which may then result in rupture of one of the chambers. Pockets of retrobulbar gas and increased contrast between the organs of the body cavity are useful diagnostic findings in radiographs of swim bladder rupture.

Excessive amounts of gas in the bowel causing intestinal tympany can be due to bacterial infection or obstruction and also result in abnormal buoyancy.

Many cases of abdominal swelling or buoyancy disorder do not recover but owners are often keen to pursue some medical management. This may include adding salt (1-2 grams/ litre) to freshwater facilities, raising or lowering the temperature, starving for 2-3 days, or feeding a crushed garden pea once daily. Some proprietary pet shop medicines containing formalin and organic dyes claim to be effective against bacterial diseases of the swim bladder. Antibiotic treatment by injection, immersion or medication of food may also prove useful. In cases of over-inflation, surgical reduction of the swim bladder (pneumocystectomy) may be successful although the benefit of surgically implanting heavy foreign bodies to add ballast is arguable.

It was hoped that this interactive case presentation stimulated an interest to develop a more professional approach and encourage more scientific research to investigate the wide range of internal disorders in pet fish.

Further Reading

Wildgoose WH (2001). *BSAVA Manual of Ornamental Fish*, 2nd edition. British Small Animal Veterinary Association, Quedgeley, United Kingdom.