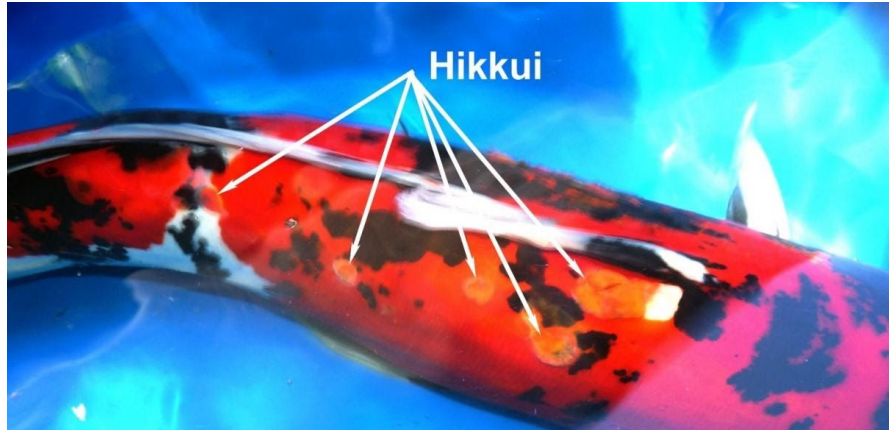


Hikui.

The bane of any koi keepers life is paying a small fortune for a stunning fish, for it then to develop this disfiguring condition. This is a skin disease that affects only the Hi (red) colouring of the skin on koi. It translates from Japanese to mean “red eating worm”. There are also numerous variations of the spelling; Hikkui, Hikui and Hi-Kui. Unfortunately the exact cause of Hikui has not been determined as of yet. It is a fairly common problem.



There is strong suspicion that it may be a type of skin cancer but this has not been confirmed. Other possible explanations may be bacterial or viral causes, but once again there is no concrete proof of these theories. There are some Japanese breeders who have beliefs that it may be a hereditary condition and will not breed from any koi that display symptoms of hikui.



Symptoms

It often starts as a small blotch or blemish that is orange/yellow in colour. However, as time goes on the affected area gets bigger as it eats through the red skin until only white remains. It can also look like “jelly” like blobs on the skin and the koi can develop excess mucous to the affected area which can make it look even more unsightly. Unlike

parasites and bacterial issues, the affected koi usually continue to feed and act normally.

The Science

A study was performed on a number of affected fish. Histology (microscopic examination of the structure of tissues) showed that some of the samples displayed similar structure to perivascular wall tumours. Meaning tumours deriving from the cells of blood vessels. Some of these koi underwent surgery in an effort to remove

the hikui. Some of these surgeries were successful, however there were some cases recurred. The study found that surgery was the best option in dealing with the “neoplastic nature” of this

problem. “Neoplasia” describes the process of various diseases, the most common is described as uncontrolled, abnormal growth of cells or tissues in the body. When grown, the affected area is referred to as a neoplasm or tumour.

These tumours may be benign (not cancerous) or

malignant (cancerous). Benign tumours are the more slow growing whereas the malignant type are much more aggressive and quickly spread or grow.



Treatment

Duncan Griffiths has a step by step guide to treating Hikui (reference list). This involves sedating the affected fish and removing the affected tissue. These include the use of cauterizing agents being applied to the affected areas. It should be noted that these chemicals can also cause the existing Hi to become discoloured or fade completely.

There are currently no medications to add to the pond that are effective.

To treat the koi topically it will need to be sedated well as you may be working on it for a while. Ensure you have everything to hand prior to catching the koi, you do not want to be leaving it unattended while it is put under sedation. Once the koi is sedated well, clean the affected area with anti-bac or roccal and dry with kitchen roll or gauze. Using a fresh sterile scalpel blade try using the blunt side to scrape away the affected skin. If this doesn't work then use the sharp side to carefully slice away the damaged tissue. It may bleed which is where the cauterizer is used. Cauterizer can be purchased from Duncan Griffiths or Lincolnshire Fish Health. Alternatives are Potassium Permanganate paste or Hydrogen peroxide, but these will require rinsing off once bleeding has

stopped. You then seal the wound with orashesive powder and top coat sealer before recovering the fish back in the pond. Friars Balsam has also been used to seal these wounds.

Unfortunately once the Hi has gone, it is very unlikely to come back due to the deep tissue damage. Recurrence of Hikui in other red areas may also be an issue.

Prevention?

As discussed previously, Hikui appears to be primarily caused by a virus or due to genetics. Possible things you can try



is protecting your koi from direct sunlight. Much like humans who can get skin cancer from UV damage by spending too much time in the sun, putting shade over your pond may work as a sunblock. Doing this may

protect the delicate koi skin and reduce the harm done by the sun's rays, especially at peak times in summer. It will also help reduce algae blooms and prevent predatory birds spotting your prize collection!

****The YKS accepts no responsibility for any damage or loss caused by following this guide. Any treatments are carried out at your own risk. Always follow the instructions on the packets, Know your pond volume and double check your calculations ****

References

<http://www.koiquest.co.uk/Hikui.htm>

<https://www.ncbi.nlm.nih.gov/pubmed/27311577>

<https://koiorganisationinternational.org/koi-articles/hikkui-possible-cause-and-remdies>

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