SPRING VIREMIA OF CARP

ANIMAL GROUP AFFECTED	TRANS-MISSION	CLINICAL SIGNS	FATAL DISEASE ?	TREATMENT	PREVENTION & CONTROL
Several carp species, some other cyprinid and ictalurid species.	Horizontal transmission via water, mechanical transmission via parasites, birds and equipment. Egg related transmission cannot be ruled out.	Abnormal behaviour and swimming pattern, ascites, oedema, exophthalmia, mucoid faecal casts haemorrhages in the gills and skin, anaemia and pale gills.	Depends on age, water temperature and other stress factors.	No treatment. Epidemics can be controlled by quarantine, hygienic measures and disinfection, raise of water temperature to above 20 °C.	*In houses* *in zoos* Obtain fish from SVCV free stock. Depopulation and disinfection. Continuous rearing at 20 to 22°C. Hygienic measures. Beware of potential carriers. Vaccination is at an experimental stage.

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Susceptible animal groups
Ornamental (koi), wild and farmed common carp, grass carp, bighead carp, silver carp, crucian carp. Sheatfish, goldfish, tench, ide, tench. Maximum mortality can be expected at water temperatures between 8 and 18°C. The younger the fish the higher the susceptibility.

Causative organism
Rhabdovirus carpio

Zoonotic potential
No

Distribution
North and South America, Europe, Middle and far East, Russia.

Transmission
Virus (from clinically ill fish or carriers) enters the body through the gills and is spread via gill and skin mucus, urine and faeces (mucoid casts in the water), exudate of skin blisters or oedematous scale pockets. Mechanical transmission via blood-sucking parasites (leeches, fishlouse), birds and equipment. Egg related transmission cannot be ruled out.

Incubation period
Dependent of the temperature of the water. Disease usually occurs in spring when water temperature rises after a cold, stressful winter.

Clinical symptoms
Lethargy, loss of equilibrium, decreased respiration rate, darkening of the skin, oedema, exophthalmia, ascites, pallor of the gills, haemorrhages in the skin, eyes and gills. Mucoid faecal casts (white/ cream colored) protruding from the vent.

Post mortem findings
See also clinical signs. Enteritis and peritonitis. Oedema, petechiae and ecchymoses in several organs. Ascites. Histology: oedema in several organs. Liver: dissociation of hepatocytes, focal necrosis. Spleen: increased number of lymphatic and hemoblastic elements, hyperplasia of the reticuloendothelial system. Inflammatory changes in the pancreas. Necrosis in the tubular epithelium and the haemopoietic tissue of the kidneys, serous fluid in the glomeruli. Vascular oedema and cellular infiltration in intestines, heart and brain.

Peritoneum inflamed and lymph vessels filled with detritus and macrophages. Perivascular inflammation in the intestines and desquamation of epithelium and atrophy of the villi.

Diagnosis
Immunofluorescence tests, ELISAs. Virus isolation and virus neutralization test. PCR.

Material required for laboratory analysis
Serum, tissues like spleen, liver, kidney, gill, encephalon (submit several tissues).

OIE Reference Laboratories in Europe

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Treatment
No treatment available. Increase the water temperature to above 20°C. Secondary bacterial infection can be treated.

Prevention and control in zoos
Obtain fish from SVCV free stock. Use a water source free from disease (virus can remain infective for 42 days in water/mud). Disinfection of eggs by iodophors. Continuous rearing at 20 to 22°C. Hygienic measures. Vaccination is in an experimental stage. Depopulation and disinfection.

Suggested disinfectant for housing facilities
Formalin, ozone, sodium hypochlorite, organic iodophors, gamma and UV radiation, pH<4.0 or> 10.0, heating at 60°C for 15 minutes.

Notification
Yes

Guarantees required under EU Legislation
UK has implemented EC regulation: EC/93/44

Guarantees required by EAZA Zoos

Measures required under the Animal Disease Surveillance Plan

Measures required for introducing animals from non-approved sources

Measures to be taken in case of disease outbreak or positive laboratory findings
Consult national veterinary authorities

Conditions for restoring disease-free status after an outbreak

Contacts for further information

References

1. OIE Aquatic Animal Health Code 2003, Part 2 chapter 2.1.4., OIE, Paris, France.
2. OIE Manual of Diagnostic Tests for Aquatic Animals 2003, Part 2, Chapter 2.1.4., OIE, Paris, France.
3. Petty, B.D., A. C. Riggs, R. Klinger, R. P. E. Yanong and R. Francis-Floyd. 2002. Fact Sheet VM-142. Department of Fisheries and Aquatic Sciences, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. http://edis.ifas.ufl.edu
4. Stoskopf M.K.. 1993, Fish Medicine. W.B. Saunders Company, Philadelphia, London, Toronto, Montreal, Sydney, Tokyo.
5. U.S. Department of Agriculture, APHIS Factsheet.http://www.aphis.usda.gov/vs/aqua/aquaphis.html
6. Woo, P.T.K. and Bruno, D.W. (Eds) 1999. Fish Diseases and Disorders Vol.3: Viral, bacterial and fungal infections. CABI Publishing, Oxon, UK.