

Kunjin Virus neurological disease in horses

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Background

Early in 2011, an increase in the number of horses suffering from neurological disease was detected in NSW and Victoria. The majority of cases in NSW were identified as being caused by Kunjin virus.

Kunjin virus has always been present in northern Australia, but had not been known to cause disease. It appears that Kunjin virus has recently mutated to a form that now does cause disease.

What is Kunjin virus

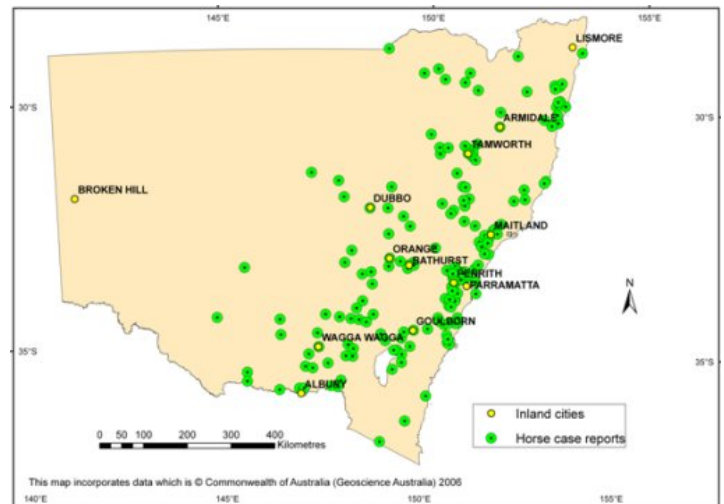
Kunjin virus is an Arbovirus in the Flavivirus group. It is carried by mosquitoes. Waterbirds, especially herons and ibis act as a natural reservoir for Kunjin virus, and do not become sick when infected. Mosquitoes feed on the birds and then transfer the infection to horses.

Kunjin virus is closely related to West Nile virus. West Nile virus causes disease in birds and humans as well as horses. Kunjin virus appears to lack the gene mutation that results in West Nile virus New York strain 99 causing serious illness with many deaths in birds and some in humans. Kunjin can occasionally cause disease in humans, but illness is usually mild. Disease due to Kunjin virus has not been recognised in birds in Australia, though it is possible that it does occasionally occur.

Geographic distribution of cases

In 2011, cases of Kunjin virus in horses in NSW were widely distributed, mostly west of the Great Dividing Range, from Mungindi in the north to the Murray River in the south (see map). There was a significant cluster in the Hawkesbury Valley west of Sydney.

However the distribution may be different each year reflecting areas of heavy rainfall, especially early in the "Kunjin season" (assuming this develops). However, as new generations of water birds carrying the virus mature and migrate, there may be more general spread.



However, it should not be assumed that above average rainfall is necessary for the disease to occur. In 2011 there were some cases in areas with below average rainfall. They were usually close to watercourses.

Signs of Kunjin virus in horses

The range of incubation period for Kunjin virus has not definitely been established. It is usually a few days, but occasionally appears to be as long as a few weeks.

Horses affected by Kunjin virus are depressed and reluctant to move. In the early stages of the disease this may be mistaken for colic.

Horses are generally incoordinated. The most common signs seen are dragging the toes of the front feet and high stepping behind. Or they can be just generally unsteady on their feet. More severely affected horses may pitch forward onto their nose, buckling at the knees when attempting to graze. Those that fall to the ground have difficulty rising.

There may be muscle fasciculations (twitching) of the face and neck, and even the whole body. There may be swelling of the face, and paralysis of the face, particularly the lower lip which will droop.

Horses may have difficulty eating and drinking, and should be checked that they are actually swallowing water when standing over a water trough.

The temperature may remain fairly normal (38.0-38.5 degrees), and a high fever is unusual. (This is important to differentiate the illness from Hendra virus where horses may present with a temperature of 40 degrees or above).

Despite the alarming nature of these signs, the majority of horses appear to recover uneventfully, over a few days to a few weeks.

However, a few horses develop severe disease, and about 10% of horses have died in this first outbreak.

Follow this link to see a horse infected with Kunjin virus.

<http://www.youtube.com/watch?v=-KL1txaNTPk>

Treatment

Prompt veterinary attention is recommended to limit the severity and duration of illness in affected horses.

Most veterinarians are treating this disease with supportive therapy, anti-inflammatory drugs, and fluids if horses become dehydrated. More severely affected horses may require antibiotics to protect against potential secondary infections.

Precautions with any neurological disease

Kunjin virus has clinical signs that overlap with those of [Hendra virus](#), and if any horse showing neurological illness, all risk factors should be assessed before handling the horse. The main signs that may help to distinguish between the two diseases are:

Hendra – high fever, rapid progression of severity of illness, possible exposure to bats

Kunjin – usually normal temperature, progress of disease usually slower and less severe, proximity to waterways and possible exposure to mosquitoes

If there are risk factors such as bats frequenting the paddock, adopt the precautions you would use with [Hendra virus](#). Avoid handling the horse or use personal protective equipment if handling is necessary. It is likely that your veterinarian will take samples to submit to the laboratory to exclude Hendra virus as the cause, for the safety of all concerned.

The horse is “dead end” host for Kunjin virus and other mosquito-borne infections so is not considered to be a source of infection to other horses or to people. I.e. It seems that the virus is not found in the horse’s blood in sufficient amounts (if at all) for a mosquito to bite an infected horse and pass the infection to another horse, or to a human.

Prevention

Prevention is based on minimising the exposure of horses to mosquitoes. Long acting insecticides are now available that claim to protect horses for a week. Rugs with hoods, the use of insecticides and keeping horses stabled at night when mosquitoes are active will reduce risk of exposure, but elimination of risk is probably not possible.

The future

Because disease due to Kunjin virus has only recently emerged, there is still much to be learned about how this virus will behave in the future. However surveillance has indicated that the majority of the horse population has still not been exposed to Kunjin virus and so remain susceptible to infection. A few horses surveyed developed antibodies to Kunjin virus without the owners noticing any illness, but such cases are in the minority.

It is too early to say whether horses will develop immunity to this disease, or whether the disease will re-appear with each mosquito season.

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