Hyper-hearts in cats

Chris Welland

Hyper-hearts is a common cat condition. It is believed that as many as one in six cats have heart disease. Here Chris Welland looks at the symptoms and gives advice for owners if you suspect your cat may suffer from this condition.

It is believed that as many as one in six cats have heart disease. A high percentage suffer from a disorder called Hypertrophic Cardiomyopathy (HCM). A lot of cats will remain symptom free throughout their lives, some may develop congestive heart failure (CHF) and others can succumb to a devastating condition called arterial thromboembolism (ATE).

What is HCM?

HCM is a disease of the heart which leads to a thickening of the heart muscle and results in the heart not being able to relax properly. The disease is much more common in cats compared to people in which the estimated prevalence is only two in 1000. It is more frequently seen in male cats.

Gene mutations have been identified in Maine Coon and Ragdolls. Other predisposed breeds include American Shorthairs, Persians and Domestic Shorthairs. This disorder has been reported in cats from 3 months to 17 years of age. ATE is due to the tendency for blood clots to form on the lining of the enlarged heart. These clots often become free and end up blocking the blood supply to the hind legs.

What do owners see?

Many cats are free of symptoms. Some show a fast or difficult breathing pattern, can faint or become lethargic and have a decreased appetite. With ATE cats will often present with hind limb paralysis and will frequently cry in pain. Sadly sometimes the first sign may be the last sign – some cats can die suddenly with this disease.

What might your vet find?

Using the stethoscope, heart murmurs (abnormal heart sounds) or gallop rhythms (an extra heart sound that makes it sound like a galloping horse!) or an arrhythmia (abnormal rhythm) may be detected. Changes in the breathing pattern may also be found.

So how does my vet reach a diagnosis?

If your cat has signs of heart disease it should be checked out. It is vitally important to rule out other diseases that can thicken the heart muscle just like HCM. A blood test to check for hyperthyroidism, a blood pressure measurement and a red blood cell count (both anaemia and dehydration can affect heart parameters) should be undertaken early in the workup. In these disorders the heart muscle can remodel back to normal with treatment.

If these tests are normal the next step involves doing an ECG, chest x-rays, blood tests and most importantly an ultrasound exam (echocardiography or 'echo').

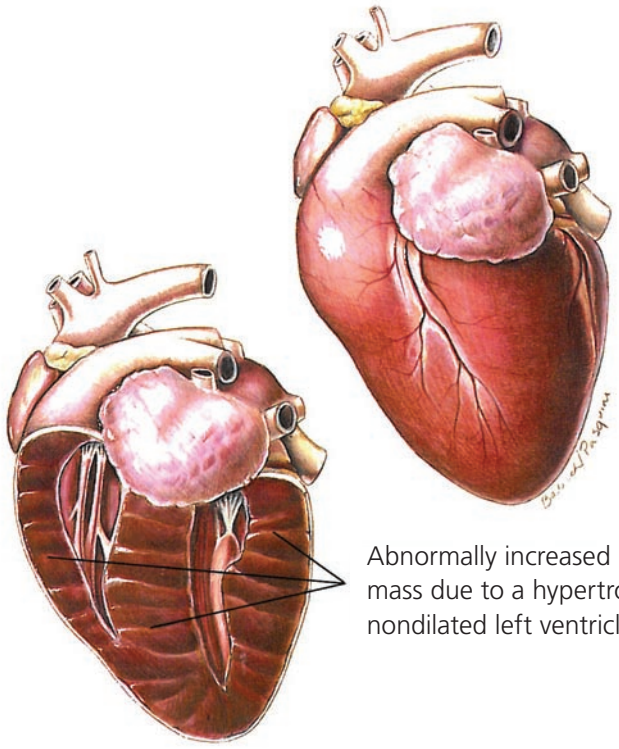
The ECG checks the electrical activity of the heart. Unfortunately highly variable and nonspecific results are often found.

Chest x-rays can be normal with mild disease. The heart may appear enlarged. Fluid in the chest or in the lungs appears with CHF.

Blood tests can help confirm the diagnosis of ATE. Overseas specific blood tests, referred to as biomarkers, have become available for use in cats. These have been used for some time in people. Potentially the most useful marker in cats is known as NTproBNP and is increased as the heart muscle gets stressed. This blood test may be useful to help confirm heart disease, as a screening test in 'healthy' individuals, to check whether the disease is progressing and to monitor whether medication is helping the heart. Like many blood tests, false positive and negative results and 'grey area' results will likely still be an issue.

Echocardiography is still regarded as the 'gold standard' test for HCM. An echo exam should always be undertaken

Feline hypertrophic cardiomypathy



Abnormally increased muscle mass due to a hypertrophied, nondilated left ventricle.

Copyright: Hill's Atlas of Veterinary Clinical Anatomy

The diagram shows how the thickened heart muscle reduces the size of the heart chambers and interferes with the efficient pumping of the heart.

Treatment summary

Diagnostic Plan

- History
- Physical Examination
- Blood tests
  - *to check for hyperthyroidism*
  - *to check blood pressure*
  - *to test red blood cell count*
- ECG
- Chest x-rays
- Electrocardiography
- Echocardinology (ultrasound)
- Urine analysis

Therapeutic Plan

- Enforced rest
- Bronchodilators
- Oxygen therapy
- Removal of fluid from chest and abdomen
- Drugs that dilate blood vessels
  - *Aspirin*
  - *Beta blockers*
  - *Heparin*
- Surgery

Dietary Plan

- A diet that avoids excess levels of sodium

after copy-cat conditions have been ruled out (*see previous*). The exam can usually confirm HCM, will reveal the form and severity of HCM and the findings will give a guide as to the risk for ATE.

Most cats seem to handle an Echo exam well (it is not a painful procedure), but occasionally 'heart safe' sedatives are given to calm an anxious feline.

My cat has HCM – do we need to treat?

Due to the highly variable nature of the disease, your vet may consider the following:

- *Ease of medication*
  This is always top of the list! Most heart medications are tablets or capsules and in a lot of cases need to be given life-long.
- *Echo findings*
  Certain heart chamber measurements if exceeded can increase the likelihood of ATE.
- *Status of heart*
  Whether your cat is in heart failure or not.
- *Family history*
  If you have owned a cat that has suffered from a complication of HCM then there will be the potential for an increased risk in related individuals.
- *Serial echo exams / biomarker results*
  If mild HCM is detected, your vet may recommend not treating at this stage. Rechecking the heart periodically (six monthly) may reveal any progression. Treatment may be started if the disease is advancing.
- *Previous history*
  If your cat has survived an episode of CHF or ATE, ongoing treatment is strongly recommended.

How do we treat?

Despite the high prevalence of HCM in cats, the ideal treatment strategy remains controversial. The same problem also exists in the prevention and treatment of cats at risk from ATE. The main focus of treatment of HCM is to try and get the heart muscle to 'chill-out' (to slow down and relax).

This has traditionally involved human drugs belonging to the classes of Beta blockers and calcium channel blockers. Drugs known as ACE inhibitors also improve forward blood flow. CHF is treated with a combination of drugs including diuretics to remove excessive fluid, and oxygen therapy. Treatment of ATE involves pain relief, sedatives and anticoagulant therapy (to prevent more blood clots).

Prevention of ATE has traditionally involved using low dose aspirin therapy. Recently drugs such as low molecular weight heparin (LMWH) and anti-platelet drugs such as clopidogrel are showing promise.

Is my cat going to be OK?

A large number of cats will remain

Case Study - Monster

Monster with owners Mark and Annette.

Background

In 1997, Mark and Annette Cranness were living in California and were desperate to find another cat to join their family.

A local animal rescue agency had pets for adoption at a Saturday morning market and a young grey cat worked his charm and was happily adopted into their home.

Monster by size (he reached 9kg!) and occasionally Monster by nature (he suffered from separation anxiety) - he lives up to his name which, as you've probably guessed, is Monster.

But he didn't seem to be as active as his playmate and would occasionally take himself off and lie down.

symptom free throughout their lives even without treatment. The long term prognosis for cats with CHF is guarded. Approximately one in three cats survive their initial episode of ATE. The average life expectancy of the survivors is approximately 1 year.

Should we screen for HCM?

With one in six cats in New Zealand potentially affected by HCM, screening is a good idea. Unfortunately there is not yet a simple, one-time, low-cost test available. DNA tests in the future may be able to rule out the disease lifelong in all cat breeds.

Testing, either via echo or blood tests for biomarkers, will rule out significant HCM at this stage in your cat's life. If HCM is detected, serial monitoring is useful to check whether the disease is progressing.

Note that many symptom-free cats will not need to be treated. However, cats are so good at masking disease that cats can have severe heart disease without owners noticing any signs.

The downside of screening is that it may reveal a disorder that may not ever be a problem for the cat but may cause undue anxiety in the owner.

Conclusion

Hyper-hearts in cats is a common, complex, confusing and controversial condition. Hopefully in the future we will have a better understanding of HCM and will reliably be able to prevent and treat the disease and its complications.

Chris Welland is a veterinarian at the Halifax Veterinary Centre in Nelson. He holds post-graduate qualifications in companion animal medicine and sees referral cases on a wide range of medical problems of cats and dogs. Ultrasound, including echocardiography features strongly in his work.

In 1999 the family moved to New Zealand. A couple of months later Monster was taken to the vet clinic after suddenly collapsing and experiencing breathing difficulties. With an ultrasound diagnosis of HCM he was started on a beta blocker.

Outcome

Once on medication, Monster was a happier and more active cat and over the last 11 years has not displayed any more breathing problems.

He is now an elderly fellow but is still in quite good health.

Monster provides a good example of where medication for HCM appears to make a substantial and prolonged improvement in quality of life.

Monster - a whopping 9kg, is a good example of how medicating for HCM can improve quality of life!

10 Frustrating Feline Facts

1. Cats don't cough with congestive heart failure (unlike dogs and people).
2. The severity of HCM is hugely variable.
3. Some cats don't progress even without treatment.
4. Finding a murmur does not necessarily mean HCM (in a recent study only five out of 16 cats with a murmur had HCM).
5. A lack of a murmur does not rule out HCM in healthy cats (the study revealed that only a third of cats with HCM had a murmur).
6. ATE or sudden death may be the first and last sign.
7. Clinical symptoms and physical findings can be very subtle or nonexistent.
8. X-ray findings of CHF are more variable in cats than they are in dogs.
9. There is a lack of controlled studies looking at the effectiveness of treatment of HCM and ATE.
10. Other diseases can mimic HCM – the most common being hyperthyroidism (too much thyroid hormone) and other conditions causing high blood pressure (*See PAWS issue 43).*