Atenolol and survival in cats with asymptomatic hypertrophic cardiomyopathy

Clinical scenario
One of your colleagues asks you to scan Rupert, a five-year-old, male neutered, domestic long-haired cat, as she detected a heart murmur at his vaccination last week. During the clinical examination you find no abnormalities except a grade 2 to 3/6 systolic heart murmur, which you think is of greatest intensity on the left-hand side. Rupert’s owners think he is fine and had no concerns before his vaccination. On echocardiography you find significant thickening of the left ventricular wall at the end of diastole and diagnose asymptomatic hypertrophic cardiomyopathy (HCM). Rupert’s owners want to know if they should treat him or not, as they are worried that he will develop heart failure and they will lose him. You wonder if beginning administration of β-blockers while Rupert is asymptomatic will help improve Rupert’s life expectancy.

The question
In [cats with asymptomatic hypertrophic cardiomyopathy] does [atenolol versus no treatment] [improve life expectancy]?

Search strategy
The search strategy can be viewed at https://bestbetsforvets.org/bet/135, it is also available as a supplement to this article on Veterinary Record’s website at http://veterinaryrecord.bmj.com/content/179/7/176

Search outcome
- 250 papers found in Medline search
- 248 papers excluded as they did not meet the question
- One paper excluded as it was a review article/in vitro research/conference proceeding
- One total relevant paper from Medline
- 38 papers found in CAB search
- 36 papers excluded as they did not meet the question
- Two total relevant papers from CAB
- Two relevant papers from both Medline and CAB Abstracts

Search last performed
August 11, 2015.

Comments
The two references found in CAB were the same study (one was a summary), so only one of the references is included in the summary of evidence below.

Summary of evidence
Paper 1: Effect of treatment with atenolol on five-year survival in cats with preclinical (asymptomatic) hypertrophic cardiomyopathy (Schober and others 2013)

Patient group: Cats with preclinical HCM (n=63): 42 cats were treated with atenolol and 21 cats were not treated with atenolol

Study type: Cohort study

Outcomes: Cardiac morbidity and mortality, as well as all cause morbidity and mortality were recorded over five years. The cause of and time to death were recorded.

Key results: There was no significant difference in cardiac mortality between HCM cats treated with atenolol (10 of the 42 cats died [24 per cent]) and those not treated with atenolol (four of the 21 cats died [19 per cent]) after five years; P=0.756. There was no significant difference in all cause mortality between HCM cats treated with atenolol (45 per cent died) and those not treated with atenolol (58 per cent died) after five years; P=0.727. There was no significant difference in non-cardiac mortality between HCM cats treated with atenolol (21 per cent died) and those not treated with atenolol (19 per cent died) after five years; P=1.000. The time to death (all cause mortality) of cats that died within the study period was not significantly different between HCM cats treated with atenolol (mean [sd] 1133 days [503 days]) and those not treated (mean 1043 days [659 days]); P=0.61. Survival after five years in cats without dynamic left ventricular outflow tract obstruction (DLVOTO) was not significantly different whether treated with atenolol or not (P=0.33). Group sizes were not large enough to assess this for cats with DLVOTO. There was no significant difference in all cause mortality within five years between cats with HCM and control cats (P=0.445), although significantly higher cardiac death in the HCM group (22 per cent) compared to the control group (0 per cent) was seen; P=0.026.

Study weaknesses: There were some differences in baseline characteristics between the treated with atenolol and not treated with atenolol groups which could affect the results. At the beginning of the study, the atenolol-treated group of cats with HCM had a significantly higher incidence of DLVOTO, significantly more left ventricular hypertrophy, a significantly higher grade of heart murmur, significantly higher peak velocity of left ventricular outflow, and a significantly larger left atrial size than the HCM cats not treated with atenolol (P<0.05). The group sizes were relatively small and there was no justification of the sample size; group sizes were too small to compare survival with or without atenolol in cats with DLVOTO. No measure was made of quality of life or clinical wellbeing. Following the start of the study, additional treatments varied for the cats. Owner compliance was assumed in medication administration. The control cats were younger than the cats with HCM and all had a systolic heart murmur.


Bottom line
There is currently no evidence to suggest that long-term administration of atenolol in cats with asymptomatic HCM will improve their five-year survival time.

Authors of this BestBET for Vets
Kathryn Wareham and Rachel Dean, CEVM, University of Nottingham

doi: 10.1136/vr.i3837
Atenolol and survival in cats with asymptomatic hypertrophic cardiomyopathy

Veterinary Record 2016 179: 176
doi: 10.1136/vr.i3837