Evaluation of survival in dogs affected by Myxomatous Mitral Valve Disease

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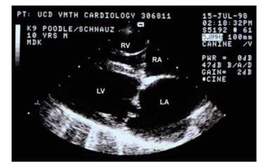


What is Myxomatous Mitral Valve Disease?

- Myxomatous mitral valve disease (MMVD) is the most common acquired heart disease in dogs (accounts for more than 70% of all cardiovascular diseases in dogs).
- MMVD occurs when there is degeneration in one of the heart valves (specifically the mitral valve for this study) that prevents complete closure of the valve.
- This allows some backflow and congestion of the blood, which can lead to enlargement of the heart, and eventually, congestive heart failure (CHF).

LOOK-Mitral Registry

- A partnership registry between VMCVM and CVCA: Cardiac Care for Pets.
- LOOK Mitral is the first registry for dogs with MMVD.
- A large database where data is collected from over 6,000 patients, following them over their years.
- Data for the study was collected, analyzed, and interpreted from the LOOK-Mitral registry.

Objectives

- To evaluate survival rates in dogs with MMVD with the creation of a survival curve for future use in research to further understand the implications of MMVD and the cause of death.

Materials and Methods

- The research was conducted remotely with access to medical records from CVCA and VA-MD.
- Medical records were also obtained from various clinics that interacted most recently with the patient before death.
- Analyzation and interpretation of records from all three locations to then tabulate all cardiac-relevant data into a spreadsheet.
- Data in the spreadsheet was used to determine the date of death, cause of death, and if possible, whether the death was cardiac-related or other, which was then used to calculate the survival curve.

Data – Survival Curve

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Dog's Name	DOB	Date of Exam	Date of recheck	Date of death	Date Diff Surv (months)	Date Diff Surv	Date Diff bt study (days)	Date Diff bt study	Sudden/Euth/Natural	Cardiac related death	For cardiac Sudden/Euth/Natural	Non Cardiac	Explain
2														
3	Mink	08/12/2006	04/28/16	05/03/21	08/28/17	132	11y	488.00	1y 4m	-	-	-	-	-
4	Amos James	01/31/2008	07/12/16	05/03/21	05/03/21	114	9y 6m	402.00	1y 1m	Euth?	N	-	Y	P presumably expired at ER after having a seizure
5	Koda	10/15/2006	07/29/16	05/03/21	11/12/19	156	13y	1202.00	3y 3m	Euth?	Y?	Euth?	N	Last appt P was coughing
6	Winter	11/07/2006	08/12/16	05/03/21	09/18/16	118	9y 10m	38.00	1m 6d	Sudden	Y?	Sudden	N	P expired on way to ER; presumably for worsening
7	Princess	07/26/2006	08/24/16	05/03/21	11/30/20	172	14y 4m	1560.00	4y 3m	-	-	-	-	-
8	Dakota	05/23/2005	07/09/16	05/03/21	01/23/17	140	11y 8m	199.00	6m	Euth	Y?	Euth	N	P was seen recently prior for coughing
9	Daisy	02/18/2007	09/27/16	05/04/21	12/03/16	117	9y 9m	66.00	2m	-	-	-	-	-
10	Teapot	08/26/2008	09/27/16	05/04/21	10/02/16	97	8y 1m	6.00	6d	-	-	-	-	-
11	Mandi	05/20/2000	10/10/16	05/04/21	12/06/16	198	16y 6m	58.00	1mo	Euth	-	-	-	-
12	callie	10/07/2007	10/27/16	05/04/21	06/27/17	116	9y 8m	244.00	8m	Euth	-	-	-	-
13	Bubba	12/03/2006	05/19/17	05/04/21	03/01/21	170	14y 2m	1383.00	3y 9m	Euth	-	-	-	-
14	ted	10/26/2006	11/08/16	05/04/21	10/26/18	144	12y	718.00	1y 11m	Euth	Y?	Euth	N?	CHF
15	Cody	04/09/2005	12/02/16	05/04/21	08/17/19	172	14y 4m	989.00	2y 8m	-	-	-	-	-
16	raven	07/27/2004	12/03/16	05/04/21	07/26/17	156	13y	238.00	7m	Euth	-	-	-	-
17	Oliver	01/30/2004	12/27/16	05/04/21	01/30/17	156	13y	35.00	1m	Euth	Y	Euth	N	CHF
18	Arial	03/14/2003	02/03/17	05/04/21	03/13/17	168	14y	39.00	1m	Euth	Y	Euth	N	Inc RR/RE + collapse
19	jordan	12/23/2012	01/31/17	05/04/21	10/02/17	57	4y 9m	245.00	8m	Natural	-	-	-	-
20	Truman	06/07/2005	05/06/16	05/04/21	04/07/17	142	11y 10m	337.00	1y 1m	Euth?	-	-	-	-
21	Buddha	01/17/2003	02/03/17	05/04/21	08/02/19	198	16y 6m	911.00	2y 6m	-	-	-	-	-
22	Zak	07/07/2005	03/06/17	05/04/21	07/17/20	180	15y	1230.00	3y 4m	Euth	N	-	Y	Inappetence + diarrhea
23	Missy	05/14/2005	03/08/17	05/04/21	12/14/17	151	12y 7m	282.00	9m	Euth	-	-	-	-
24	Cuddles	01/01/2003	03/27/17	05/04/21	03/29/17	170	14y 2m	3.00	3d	Euth	Y	Euth	N	CHF + collapse
25	Maggie	10/22/2007	05/04/17	05/04/21	12/22/17	122	10y 2m	233.00	7m	Euth	Y?	Euth	N?	Breathing issues; seen recently prior
26	prancer	10/10/2005	05/15/17	05/04/21	10/10/19	168	14y	879.00	2y 6m	Euth	Y	Euth	N	Laboured breathing, episode of collapse
27	Kai	05/12/2015	05/05/17	05/04/21	05/07/17	72	6y	3.00	2d	-	Y?	-	N?	Came in on emergency prior to death; was admitt
28	Kolt	06/19/2009	06/12/17	05/04/21	06/19/19	120	10y	738.00	2y	-	-	-	-	-
29	Chewy	02/10/2005	05/10/18	05/05/21	03/07/21	192	16y	1033.00	2y 9m	Euth	Y	Euth	N	Collapsing episode d/t CHF
30	sir romeo	12/26/2008	07/06/17	05/05/21	06/26/18	114	9y 6m	356.00	11m	-	-	-	-	-
31	Nutmeg	03/05/2003	08/01/17	05/05/21	03/05/20	204	17y	948.00	2y 7m	-	N?	-	Y?	Episodes of vomiting prior to death; but uncertain
32	Pedro	08/04/2004	07/31/17	05/05/21	08/04/17	156	13y	5.00	5d	Euth	Y?	Euth	N?	Inc RR, inappetence, pd, no production of urine, t
33	Casey	12/06/2006	08/28/17	05/06/21	05/15/19	149	12y 5m	626.00	1y 8m	Euth	Y	Euth	N	CHF
34	Gypsy	08/19/2006	08/21/17	05/06/21	11/17/20	170	14y 2m	1185.00	3y 2m	-	-	-	-	-
35	Foxy	08/12/2009	10/30/17	05/11/21	04/14/21	140	11y 8m	1263.00	3y 5m	-	-	-	-	-

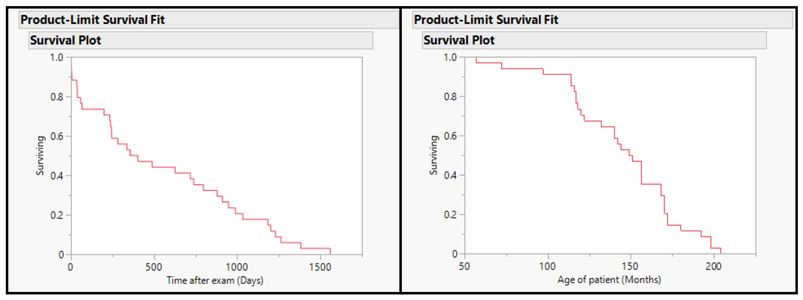


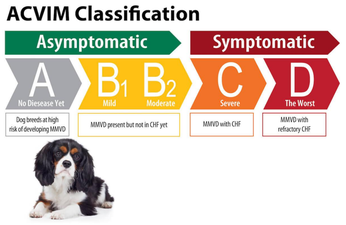
Figure 1

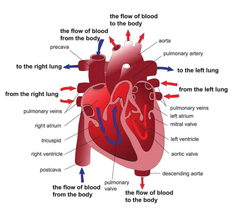
Figure 2

- Survival curve is plotted with the percentage of dogs that survived (y-axis) against time (x-axis).
- Figure 1: The survival curve was calculated based on the proportion of survivability after the dog's first cardiologic exam; plotted against time in days.
- Figure 2: The survival curve is a more generic proportion of survivability based on the age of the dog, from birth to death; plotted against time in months.

Results

- Data was compiled for 75 dogs that had passed since being enrolled in the study.
- Of the 75 dogs in the study, 34 (45.3%) were confirmed to have passed a cardiac-related death.
- Of the 34 dogs that passed, 28 (82.4%) were euthanized, and 5 (14.7%) had a sudden death.
- Figure 1: The mean survival time was 379.1 +/- 82.4 days (12.6 +/- 2.7 months) after initial cardiologic examination.
  - Range: 3 – 1560 days (0.1 – 52 months).
  - The median survival time was 379 days.
- Figure 2: The mean survival time was 145.5 +/- 5.9 months after birth.
  - Range: 57 – 204 months.
  - The median survival time was 150 months.





Discussion/Conclusion

- The creation of the survival curve was able to show the proportion of survivability over time in dogs with MMVD. Excluding the age of the dog or other possible underlying conditions, the survival curve demonstrated a significant impact on survivability within a lifespan of up to 4.5 years after examination.
- More research is needed to be done to have a more comprehensive grasp on MMVD and survivability, but this preliminary research was a good first step. True fruition of the research will take many years as the study follows the progression over the dog's lifespan.
- Further data can be used to classify survival time in dogs to more closely understand the impact of MMVD. For example, determining survival time based on the ACVIM classifications, or using data to understand if there are predictors that can significantly impact survival time.
- Determining if age, gender, breed, size, and whether medications were used can also be used to further understand MMVD and their roles in the impact on survival.

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