Lifetime prevalence of malignant and non-malignant tumors in companion dogs: analysis of Dog Aging Project baseline data

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Background

- Cancer is a leading cause of canine morbidity and mortality, yet its frequency in companion dogs has not been robustly characterized.
- The Dog Aging Project (DAP) is recruiting over 30,000 companion dogs to a prospective study of determinants of healthy aging.
- We analyzed data from the DAP baseline Health and Lifestyle Experiences Survey (HLES) of owners of 27,541 living companion dogs enrolled as of December 31, 2020 to estimate the lifetime prevalence of malignant and non-malignant tumors and several potentially-associated characteristics.

Conclusions

- The are three major limitations of this study: i) *reliance on owner-reported diagnoses;* ii) *reliance on prevalence data;* iii) *likely under-representation of "internal" malignancies that have poor prognosis*.
- We observed the lifetime prevalence of malignant tumors to increase with increasing dog size class. Prior studies have produced inconsistent results on that association.

Methods

Data Source

Baseline HLES

- Whether the dog had ever been diagnosed with "Cancer or Tumors," body location(s) that were affected, and type(s) of cancer or tumor
- Dog age, size class, and breed status

Data Processing

- Tumors classified as malignant or non-malignant based on owner-reported location and tumor type

Analyses

Lifetime Prevalence

- Lifetime prevalence = number of dogs reported to have a history of tumors (either malignant or non-malignant) per 1000 DAP participants
- Crude associations estimated in relation to current dog age, breed status and size class (derived from HLES)
- Estimated age-adjusted prevalence ratios (PRs) using Poisson regression models, and corresponding 95% confidence intervals (CI)

Results

- 1,111 dogs were reported to have a history of malignant (819) or non-malignant (404) tumors. The lifetime prevalences of malignant and benign tumors were 29.7 and 14.7 per 1000 dogs, respectively.
- Dogs with a history of tumors (malignant or non-malignant) were more likely to be older at baseline than the DAP Pack on the whole (Panel A).
- Dogs with a history of either malignant or benign tumors were somewhat more likely to be larger than the DAP study population as a whole (Panel B). There were no discernable differences in breed status between dogs with a history of either malignant or benign tumors and the DAP study population on the whole (Panel C).
- Age-adjusted lifetime malignant tumor prevalence ratios increased with increasing dog size class (Panel D).