

## Peri-articular histiocytic sarcoma in Bernese Mountain Dogs: a retrospective investigation of the prevalence of this tumour in association with previously diseased joints.

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### Introduction

Histiocytic sarcoma complex is commonly found in Bernese Mountain Dogs (BMD), and a genetic association has been unravelled in this breed. Peri-articular histiocytic sarcoma (PAHS) is a sub-entity of this histiocytic sarcoma complex. The hypothesis of this study is that PAHS in BMD will be more frequently encountered around previously diseased joints compared to normal joints.

### Material and methods

Data were compiled from a European internet questionnaire ([www.bmdhealthsurvey.eu](http://www.bmdhealthsurvey.eu)), and the medical records of two pathology labs. Statistical analysis was performed through Chi-square tests and logistic regression analysis, with significant results assumed at  $p < 0.05$ . Effect Size was analyzed by means of Nagelkerke  $R^2$ .

### Results

Data from 1550 BMD were obtained, of which 697 had a completed questionnaire and were used for statistical analysis. 22 BMD were identified with PAHS. A significant association between previous joint trauma and the development of PAHS around the same joint was demonstrated for the left elbow ( $p=0.026$ ), right elbow ( $p=0.035$ ), left stifle ( $p=0.018$ ), and right stifle ( $p=0.023$ ). Effect Sizes ( $R_N^2$ ) for these joints were 0.621, 0.651, 0.721, and 0.499 respectively.

### Conclusion

Significant association in combination with reasonably high Effect Sizes indicate a causal relation of previous joint trauma and the development of PAHS in elbow and stifle joints of European BMD. However, studies with larger numbers of dogs with PAHS should be performed to make this conclusion more powerful. Future investigations on PAHS carcinogenesis, e.g. combining genetic predisposition and chronic arthritis, may lead to the development of early-detection programs for PAHS in BMD with known joint pathology.