

## **Peri-articular histiocytic sarcoma and synovial cell sarcoma in Bernese Mountain Dogs: a retrospective investigation of the prevalence of these tumors in association with previously diseased joints.**

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### Introduction

Histiocytic sarcoma complex (HSC) is commonly found in Bernese Mountain dogs (BMD). Peri-articular histiocytic sarcoma (PAHS) is a sub-entity of HSC. PAHS may be confused with synovial cell sarcoma (SCS) on histology. The hypothesis of this study is that PAHS/SCS in BMD will be more frequently encountered around previously diseased joints compared to normal joints.

### Methods

Data were obtained through a European internet questionnaire ([www.bmdhealthsurvey.eu](http://www.bmdhealthsurvey.eu)), and medical records of two pathology labs. Statistical analysis was performed by Pearson Chi-square and Fisher Exact tests. Effect Size was analyzed by Nagelkerke R<sup>2</sup>. 4 PAHS and 4 SCS were immunolabeled with CD18 and pancytokeratin in an attempt to differentiate these tumor types.

### Results

All PAHS and SCS stained positive for CD18 and negative for pancytokeratin. 660 European BMD were included in the study. 158 dogs had previous joint disease, of whom 13 developed PAHS/SCS around a previously diseased joint; 3 dogs had PAHS/SCS in another joint. Of the 502 BMD without joint disease, 8 developed PAHS/SCS. A significant association between previous joint disease and PAHS/SCS of the same joint was demonstrated for the left elbow ( $p=0.018$ ), and left and right stifle ( $p<0.001$ ), with Effect Sizes of 0.174, 0.231, and 0.227 respectively.

### Conclusions

Significant association with reasonably high Effect Sizes indicate a causal relation of previous joint disease and the development of PAHS/SCS in the same joint of European BMD, although the power of the statistical analysis is low due to the small sample size. CD18 and pancytokeratin staining was not able to differentiate PAHS from SCS.