Spatial clustering of neoplasia in a population of dogs from UK first opinion practice

Stephanie Marlow, Anneliese Stell, Kate English, David Brodbelt
Royal Veterinary College, London, UK

INTRODUCTION
There is limited research into the existence of spatial patterns of neoplasia in the UK general canine population. In addition, until now, there have been few sources of veterinary clinical data that reflect the general population of dogs in the UK and that would therefore enable such investigation. This study aimed to analyse spatial patterns of neoplastic disease in general and mast cell tumours (MCTs) specifically, in the UK first opinion practice-attending canine population, in order to generate hypotheses regarding environmental risk factors for neoplasia.

METHODOLOGY
All data derived from the database of the ‘VetCompass’ programme (Veterinary Companion Animal Surveillance System); which collects de-identified first opinion practice data directly from electronic patient records from over 450 recruited clinics. A case control study was undertaken to evaluate spatial clustering of neoplasia in general and MCTs. Cases were defined as dogs attending one of the VetCompass clinics included in this study, with a neoplasm confirmed via histopathology, or cytology reported by a specialist centre (2010–12). MCTs were the most frequently diagnosed potentially malignant neoplasm and were thus taken forward for individual spatial analysis. Partial postcodes for all cases and controls were extracted from the database and their centroid coordinates established via an online Google tool using the mean longitude and latitude of all potential postcodes corresponding to the area of the partial postcode. All mapping was completed in QGIS 2.6.1. Presence of clusters with statistically significant high/low relative risk, were identified via the spatial scan statistic using SaTScan software and a Bernoulli probability model. Statistical significance was set at 5%.

RESULTS
Of the dogs treated with lomustine as a first line agent (n=6) four dogs had died as a result of their disease with a median time to relapse of 57.5 days (range: 4–322). Two dogs were still alive 628 and 1095 days after starting therapy. The median time to relapse for the dogs treated with CHOP prior to receiving lomustine was 112 days (range: 49–322). Eight of these dogs had a response to lomustine as rescue therapy. Three dogs achieved complete remission, five had a partial response or stable disease and two had no response to therapy with progressive lymph node enlargement. Dogs that responded to lomustine as a rescue agent had a median remission period of 50 days (range: 18–649).

CONCLUSION
Lomustine used first line appears to offer a good long term outcome to a proportion of dogs with T-cell lymphoma, further work is required to investigate this finding.