Prospective evaluation of the utility of the vasovagal tonus index (VVTI) as an indirect assessment of remission status in canine multi-centric lymphoma undergoing multi-drug chemotherapy

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INTRODUCTION

Heart rate variability has frequently been used in human medicine as an indicator of prognosis for cardiovascular and non-cardiovascular diseases. Vasovagal tonus index (VVTI) is a simple non-invasive time-domain method to assess heart rate variability, and has been used in dogs as a prognostic indicator in cardiac disease. VVTI may also serve as an indirect marker of severity in other systemic diseases, such as canine lymphoma. The primary hypothesis of this study was that VVTI in dogs with lymphoma would increase when dogs were in partial or complete remission compared to VVTI obtained when out of remission at diagnosis or relapse. The primary objectives were to determine serial VVTI scores for dogs undergoing chemotherapy to evaluate if consistent changes in VVTI scores were associated with lymphoma remission status and if VVTI scores when out of remission were predictive of complete remission.

METHODS

Dogs with lymphoma were prospectively enrolled if they had a confirmed diagnosis of intermediate or high-grade multicentric lymphoma and underwent standard multidrug chemotherapy. Electrocardiogram (ECG) data were recorded with dogs in right lateral recumbency. A minimum of 20 R-R intervals were recorded and all ECGs were obtained in a quiet room prior to any further diagnostics or treatments. ECGs were repeated at various intervals through chemotherapy; remission status was documented at each visit. VVTI scores were compared using a random effects linear model with an autocorrelation term. Predictability of remission by means of a VVTI score was evaluated with a binary logistic regression model.

RESULTS

Twenty-seven dogs were enrolled in the study. Overall, 242 VVTI scores were collected; 63 from dogs in partial remission status, 142 from dogs in complete remission status and 37 from dogs out of remission. VVTI scores from dogs in partial remission were significantly different from dogs in complete remission, however VVTI scores from dogs out of remission were not significantly different from dogs in partial or complete remission. VVTI scores obtained from dogs out of remission were not predictive of remission status.

CONCLUSION

Preliminary investigation indicates that VVTI score may be associated with remission status in dogs with lymphoma, however further standardization of VVTI protocols may better elucidate its prognostic utility.

A questionnaire-based survey of chemotherapy drug-handling practices in UK first opinion veterinary small animal surgeries

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BACKGROUND

Hazards associated with the handling of cytotoxic agents have been recognized in human oncology for more than 3 decades. A large body of evidence documents environmental contamination in the workplace, healthcare workers exposure and biological effects following exposure to anti-neoplastic drugs. Efforts to reduce risks associated with exposure have resulted in a myriad of guidelines. In the UK, the Health and Safety at Work Act states that employers have a legal duty to protect their employees and the public and are expected to take measures to reduce exposure.

With an increasing demand from owners to treat their pet's cancer, it is likely that the administration of chemotherapeutic agents cannot be reserved exclusively to referral institutions anymore and first opinion practitioners are expected to handle cytotoxic agents more frequently.

STUDY DESIGN

A questionnaire-based survey of chemotherapy drug handling habits by first opinion UK veterinary surgeons and nurses was undertaken.

RESULTS

Completed replies were received from 65 veterinary surgeons and 5 veterinary nurses. 70.4% of the respondents were administering cytotoxic agents. 86% of them manipulated them infrequently (less than 20 times per year). Standards of care were defined according to available consensus and guidelines for safe handling of antineoplastic drugs. Compliance with standards of care was reported by 10%, 14%, 26.5%, 30% and 36% with regards to the use of mask, closed system transfer devices, chemotherapy-approved