Canine Heartworm in the Santa Clara County

Nidhi Bandrapalli
Santa Clara University
Intern at Santa Clara County Vector Control District
Mentors: Noor Tietze and Babak Ebrahimi

Background and Research Objectives

Canine Heartworm Disease (CHW) impacts around 250,000 dogs out of 3,000,000 dogs every year. This disease is caused by nematode parasite, Dirofilaria immitis, and is the most common disease affecting household dogs today. Dirofilaria immitis is transmitted to new hosts through the bite of the Western Tree-hole Mosquito (Aedes sierrensis). Throughout this project, we observed the prevalence of CHW in the Santa Clara County by surveying veterinarians in the county and gathering specific detail on each of their diagnosed heartworm cases. Coyotes are the primary sylvatic maintenance host and it has been found that areas with high coyote presence tend to have higher levels of CHW. We examined previous data on coyote sightings in the county to determine if there was a correlation between levels of CHW and coyote presence. From the baseline data, we predicted there would be higher levels of CHW in the foothills of our county and in areas that were highly coyote concentrated.

Materials and Methods

• Created a general online 25 question survey via surveymonkey directed towards veterinarians regarding their hospital's experience in treating CHW
• Contacted each of 89 pet hospitals and informed them about survey
• Created a follow-up questionnaire per city for clinics with the highest number of CHW cases (<5 cases)
• Hospitals were chosen based on two factors: number of total canine heartworm cases in the county to determine if there was a correlation between levels of CHW and coyote presence.
• Hand-delivered surveys to 15 hospitals in cities of: Milpitas, San Jose, Cupertino, Sunnyvale, Campbell, Morgan Hill, Mountain View
• Analyzed data received on both individual cases and entire data collected on general survey

Results

Of the 89 clinics, we had about 42% respondents. About 81% (30 individuals) claimed they had diagnosed a case of Canine Heartworm, 18% said they had not. Based on the data gathered from the survey, there appears to have been a slight increase in CHW throughout the county. 60% of respondents claimed that the majority of the cases they dealt with were Class 1 (mild symptoms), 36% claimed they mainly treated patients that were Class 2 (moderate symptoms), and 4% claimed they diagnosed a Class 3 case which entails loss of body condition for the canine. The highest number of canine heartworm cases in the county were found in Los Gatos, near the Santa Cruz mountains, and in San Jose. The number on the upper left corner indicates the question’s number on the survey conducted.

Materials and Methods

• Created a general online 25 question survey via surveymonkey directed towards veterinarians regarding their hospital's experience in treating CHW
• Contacted each of 89 pet hospitals and informed them about survey
• Created a follow-up questionnaire per city for clinics with the highest number of CHW cases (<5 cases)
• Hospitals were chosen based on two factors: number of total canine heartworm cases in the county to determine if there was a correlation between levels of CHW and coyote presence.
• Hand-delivered surveys to 15 hospitals in cities of: Milpitas, San Jose, Cupertino, Sunnyvale, Campbell, Morgan Hill, Mountain View
• Analyzed data received on both individual cases and entire data collected on general survey

Results

Of the 89 clinics, we had about 42% respondents. About 81% (30 individuals) claimed they had diagnosed a case of Canine Heartworm, 18% said they had not. Based on the data gathered from the survey, there appears to have been a slight increase in CHW throughout the county. 60% of respondents claimed that the majority of the cases they dealt with were Class 1 (mild symptoms), 36% claimed they mainly treated patients that were Class 2 (moderate symptoms), and 4% claimed they diagnosed a Class 3 case which entails loss of body condition for the canine. The highest number of canine heartworm cases in the county were found in Los Gatos, near the Santa Cruz mountains, and in San Jose. The number on the upper left corner indicates the question’s number on the survey conducted.

Conclusion

As our results indicated, there were higher cases of heartworm in areas that were located near the foothills and rural land. It is important to note that dog owners do travel with their dogs and don’t always visit the same hospitals. The clinics located near the red shaded areas on the map tended to have higher amounts of canine heartworm indicating a potential correlation between coyote prevalence and canine heartworm prevalence. As per sample size of those surveyed and the data gathered, we conclude that heartworm prevalence is slowly increasing each year in the Santa Clara County.

Next Steps

While the general data collection has been completed, we are still waiting to receive further data on individual CHW cases. The goal is to analyze the individual cases to see if there are patterns in the type of dogs that get canine heartworm, the age in which the dogs are most susceptible, and if there are ways we can limit the transmission of this disease.

References
