

Summary

Preventive medicine means is the onset prevention and the progression prevention of diseases. In the present medical care for family dogs, prevention of infectious disease by vaccination is mainstream, and the periodic medical examination for prevention of diseases begins to spread among a part of dog owners. In this study, I performed an epidemiology investigation using pet insurance data for the purpose of preventive enlightenment, searched for the risk factor associated with foreign body ingestion in family dogs, and searched for the dog breast tumor early checkup marker as the progression prevention. Furthermore, in a past study, adiponectin was proved to be useful as an early checkup marker in a breast tumor. So I examined possibility of the application to the preventive health care of such a biochemistry marker in dogs. Through these, I aim at becoming the clue to realization of the preventive medicine about various diseases of the dog.

1. Disease statistics of the dog by pet insurance data

Insurance payment data are the epidemiology data which had the information "that received payment of the insurance for a certain reason in a certain population at a certain time".

Those information has the possibility that they can realize not only the aggravation prevention but also the onset prevention by sending it to the necessary one by an effective timing and method.

256,144 0-12-year-old insured dogs were surveyed and performed the disease statistics by pet insurance data. The disease that was frequent in a dog was 23.0% of skin diseases, ear disease 15.4%, digestive organ disease 14.7%, ophthalmopathy 10.0%. The disease that a notable tendency was seen by seasonal variation was a skin disease. A tendency to onset more different than a season was seen in this disease. There was a lot of dogs which contracted a disease from July to September and a few dogs which contracted a disease from January to March. The skin disease, the disease of the ear, the digestive organ disease showed high prevalence at all 0-12-year-old age. The disease of eyes and the tumor disease showed high prevalence

of more than 10.0% at after 7 years old. Prevalence tended to increase the circulatory organ disease, the tumor disease with aging. A Japanese dog showed high prevalence to the ear disease, the skin disease, the symptom in comparison with the result of the epidemiology investigation into British royal veterinary college more than 5%. The prevalence of the disease that an owner is easy to notice a symptom rises. It leads to going to the hospital early that an owner checks the health condition of the dog at home.

2. Search of the foreign body ingestion risk factor of the dog

There is much frequency of foreign body ingestion of the Japanese family dog. It becomes the big stress for an owner psychologically economically. In addition, it may lead to a fatal accident when it is the worst. Therefore it is necessary to take prophylaxis of foreign body ingestion. However, it is hard to say that the search of the risk factor to lead to the prophylaxis has been performed so far. Therefore I performed a risk factor search to lead to the foreign body ingestion prevention by pet insurance data and questionnaire survey.

The factor that much foreign body ingestion occurred was 0-1 years old, a Flat-coated retriever, a bernese mountain dog, a beagle, a French bulldog, RETRIEVER-group. The dog which dealt with sterility had high connection with the foreign body ingestion. In 13 temperament to be considered to be action properties of the dog, a related thing with foreign body ingestion was suggested for "chasing" and "attachment". In addition, the following led to fatal foreign body ingestion; things that the risk is recognized "chocolate" "ethylene glycol" (nonfreezing fluid) "slug exterminator" "raticide" "weed killer" "bamboo skewer". Things in life space close "Cloth such as socks or the towel", "seed of fruit and the pickled plum", "a stone and sand", "ball" "lily". The thing which pet owner gave for a dog "supplement" "snacks" "gum". For these risk factor candidates, performing preventive enlightenment with a concrete image, carrying out and measures every individual factor, inspection those effects, and carrying out again are important.

We can expect it when connected for the prevention of substantial foreign body ingestion by doing so it.

3. An investigation into tumor prevalence of the dog and search of the breast tumor early checkup marker

For approach to the tumor high-risk group, I investigated the tumor prevalence of the family dog. In addition, for the purpose of groping for simple procedure, I searched for the early detection marker of breast tumor.

The prevalence of the tumor disease of the dog (0-10 years old) was 7.9% in bitches 6.4% in male dogs. A bitch showed the ratio that was 1.5% higher than a male dog. In addition, increase in age-related prevalence was seen. After 6-7 years old in particular showed a tendency to increase that was more sudden than it past. The ratio of tumor disease among the claim before the death contract accounted for 16.9% in 10 years old. In 16 dog breed and a mixed dog less than 10 kg, the dog breed that showed the prevalence of the highest tumor disease was golden retriever 15.4%. the prevalence of breast tumor of the bitch was 0.4% at 4 years old, increased by aging afterwards, and was 3.9% at 11 years old. The dog breed that showed the value that the prevalence of breast tumor was higher in than 0.7% of whole dog was Maltese dog 1.3%.

I measured mRNA expression of blood of the dog which became the operation adaptation of breast tumor and isolated tissue tumor-related gene p21, p53, erbB2, BRCA1 and BRCA2 for the purpose of searching for breast tumor marker. However, all genetic expression had a big individual difference, and the significant difference ($P < 0.05$) was not recognized between a malignancy of the illness.

By the prophylaxis of cancer, the making of of the early detection structure and maintenance of the information infrastructure of that purpose are important. The enhancement of the support system when promotion of the examination in an appropriate timing, establishment pro-inspection such as tumor marker or the genetic test of the dog, "the early detection of cancer" were done every instruction and dog species of the home check by the owner is expected.

4. Possibility as the newly early tumor diagnosis marker of adiponectin

To investigate the role of adiponectin (APN) in development of mammary tumor, plasma adiponectin concentrations and expression of mRNA of adiponectin specific receptors, AdipoR1 and AdipoR2, were measured in mammary tumor tissues of dogs.

65% (17/26) of dogs with mammary tumor (low APN group) showed significantly low plasma APN concentrations ($14.3 \pm 1.0 \mu\text{g/ml}$, mean \pm 95% C.I.) compared to normal control values ($30.9 \pm 10.6 \mu\text{g/ml}$). mRNA expression of AdipoR1 and AdipoR2 were detected in mammary tumor tissues of dogs, and mRNA expression of AdipoR1 was 2-4 times higher than that of AdipoR2. In the low APN group, mRNA expression of AdipoR2 in mammary tumor tissues decrease compared to that in high APN group, however the difference was not significant. Decrease in circulating APN concentrations appears to be a risk factor for mammary tumor in dogs as for postmenopausal breast cancer in women.

By the disease statistics of the dog by pet insurance data, a disease to be seen frequently in Japan became clear quantitatively. In sex, age, breed, the thing investigating in detail of the hereditary or environmental factor of each disease become easy to hypothesize. And we come to be able to prevent the outbreak of a basic disease or aggravation. In this study, I groped for measures of the onset prevention of foreign body ingestion and the aggravation prevention of tumor as example. We practice these measures and inspect the effect and can hope that we reduce illness itself by raising precision.