DISTRIBUTION OF ALIMENTARY OBESITY IN DOMESTIC DOGS OF POLTAVA

Lokes-Krupka Tereziia[1],
candidate of veterinary sciences,
Tsvilichovsky Mykola[2],

doctor of biological sciences
Kanivets Nataliia [1],
candidate of veterinary sciences
Burda Tetiana[1],
master's degree of veterinary medicine
[1]Poltava State Agrarian Academy, Poltava, Ukraine
[2]National University of Life and Environmental Sciences of Ukraine, Kyiv, Ukraine
terra_vet@ukr.net

Introduction. It's no secret that the causes of alimentary obesity in dogs can be: excessive high-calorie feeding; free access of animals to easily edible food, confectionery; unregulated overfeeding together with insufficient exercise; reducing the use of stored fat for energy needs. Under alimentary factors, energy imbalance leads to increased fat formation, mainly from carbohydrates, its deposition in fat depots, organs and tissues. In sick animals, increases the concentration of total lipids, cholesterol, phospholipids, triglycerols in the blood [1].

Animals easily learn to respond and change behavior to get extra food. Periodic rewards in the form of treats have a very strong effect, and animals can beg for them more intensely until they get what they want. Usually dogs with excess body weight, in contrast to dogs with normal fatness, try to consume better quality food, refuse to perform tasks or exercise when the reward for these actions is uncertain [2].

Overweight and obesity are multifactorial pathological conditions caused by energy metabolism imbalance. Genetic predisposition is often a major factor in their development. The hereditary predisposition of animals of different breeds to the accumulation of excess body weight has also been proved. The existence of a genetic predisposition to obesity is usually recognized in humans and rodents.

Genetically determine different types of mutations at the level of chromosomes that contribute to the development of pathological conditions. Scientists have identified more than 200 genes in mice and more than 100 similar ones in humans, which play a direct role in regulating body weight [3].

High risk of obesity in domestic dogs of the following breeds:

- dogs of small breeds: kern terrier, dachshund, cavalier king charles spaniel, scottish terrier;
- dogs of medium breeds: beagle, cocker spaniel, basset hound;
- dogs of large breeds: labrador, collie, golden retriever, rottweiler;
- dogs of giant breeds: bernese mountain dog, newfoundland.

Other researchers point to the lack of influence of breed dependence on the development of obesity. They explain these differences by the working status of dogs, is whether the dog interacts with humans [4].

However, the factors predicting the early development of overweight and obesity in adult animals have not been sufficiently studied. To identify factors that may help explain the development of overweight and obesity in adulthood in dogs, Leclerc L and others [5]. For two years, female beagle dogs were studied, which were the same in physiological status, as well as bred and kept in the same conditions. Their study found that the offspring of the first generation of experimental dogs, which in the first two weeks of life grew at most at the age of seven months, already belonged to the group of animals with slightly overweight, and later, at the age of two years, to the group of overweight. Thus, the authors claim a significant imbalance of energy consumption and expenditure, which occurs from the first weeks of life in animals with slightly overweight and overweight, compared with dogs with perfect fatness [3,5]. Therefore, research in this direction is relevant.

The **aim** of the work was to determine the prevalence of alimentary obesity in dogs of Poltava.

Materials and methods. The study was conducted during 2017-2019 on the basis of veterinary clinics at the Department of Therapy named after professor

P. Lokes Poltava State Agrarian Academy, "Vet Life" and "Vet Comfort", Vet Point "Dog and Cat" in Poltava. The object of the study were dogs (Canis familiaris) with overweight, aged 2 to 11 years of different breeds and sexes (n=30).

To diagnose the animals performed general clinical studies, morphometric measurements, biochemical studies of blood serum, as well as ultrasonography. The digital material is presented in diagrams and statistically processed using MS Excel.

Results and discussion. During the collection of anamnesis for the clinical study of domestic cats and dogs with alimentary obesity, we found a significant violation of the diet of animals. Thus, the main factor in the emergence and development of alimentary obesity in animals was the feeding of additional treats (cookies, ice cream, candy), which led to a significant advantage of the proportion of carbohydrates in the diet. A concomitant factor in the occurrence of this pathology in dogs is the additional assignment to animals kept on ready-made industrial feed, a variety of sausages, as well as cheese and meat [6]. This type of feeding contributed to the predominance of the protein component in the diet. Because industrial feeds are balanced in composition, the addition of foreign components is likely to cause an excess of nutrients and, in addition, cause toxic effects on the animal's body.

We found that a characteristic feature of feeding dogs with alimentary obesity is the feeding of food in excessive quantities. Most feeds, made taking into account the physiological needs of the animal, are in the feeder around the clock, in contrast to the recommendations of manufacturers.

Small animals, and kept on a natural diet, owners often fed "from the table". In such cases, the rations contained a large number of fried foods and foods with a significant amount of spices. Such animals were constantly fed leftovers with a high percentage of fat (skin from fried chicken, fat trimmings, canned fish in oil, etc.). Feeding such food was characterized by an excessive content of exogenous fats, which also contributed to the disruption of metabolic processes in animals.

The significant duration of animal consumption of this type of food caused the accumulation of fat in their body and the development of alimentary obesity [7].

We conducted a study of 15 domestic dogs without visible signs of pathology (control group), and 30 dogs in which during a comprehensive examination found alimentary obesity (Fig. 1).

Of the thirty cases of obesity in domestic dogs, the most common pathology was recorded in pugs (36.7%) and Labrador Retriever (26.7%).

Fig. 1 General view of a dog with obesity, pug 5/9 points

Analyzing the data of the diagram (Fig. 2), we can say that alimentary obesity is more characteristic of dogs of medium and large breeds.
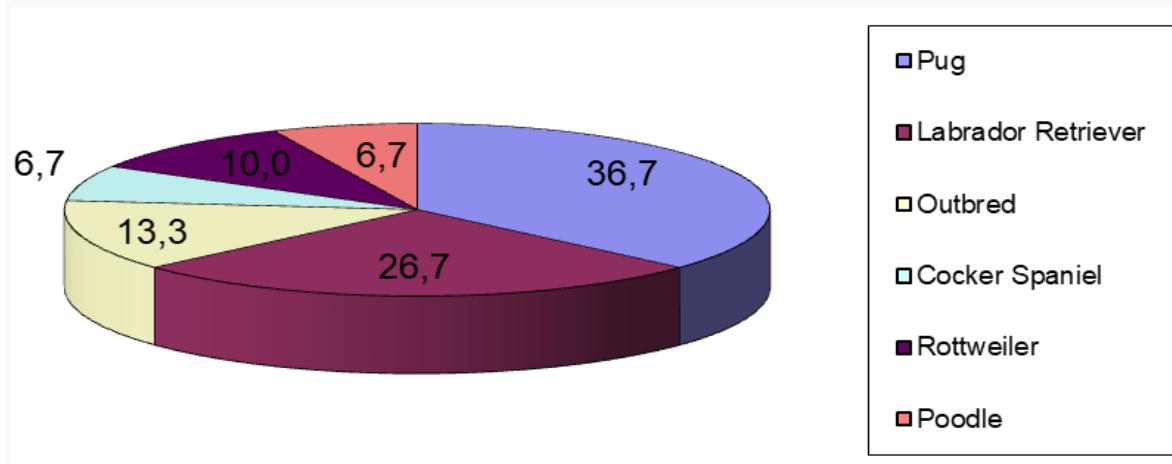

Fig. 2. Diagram of the breed predisposition of a domestic dog to obesity, %

During the study period, we registered a very small number of cases of alimentary obesity in dogs of giant and very small breeds, so such animals were not included in the general sample. This trend can be explained, firstly, by the genetics of dogs of these breeds, and secondly - the compliance of owners with clear recommendations for feeding dogs of elite breeds.

Conclusions. Thus, during 2017-2019, a number of clinics in Poltava investigated 30 cases of alimentary obesity. It was most common among pug dogs (36.7%).

Literature

1. Lokes-Krupka T. P., Tsvilichovsky M. I., & Burda T. L. (2019). Effect of rations on the development of excessive body weight of medium-breed dogs. Visnyk Poltavsʹkoyi derzhavnoyi ahrarnoyi akademiyi, (4), 224-232. doi:10.31210/visnyk2019.04.29

2. Witzel, A. (2016). Current Concepts in Preventing and Managing Obesity. August's Consultations in Feline Internal Medicine, 7, 612–621. doi: 10.1016/b978-0-323-22652-3.00064-5.

3. Fruh, S. M. (2017). Obesity. Journal of the American Association of Nurse Practitioners, 29, 3–14.doi: 10.1002/2327-6924.12510

4. Morrison, R., Reilly, J. J., Penpraze, V., Pendlebury, E., & Yam, P. S. (2014). A 6-monthobservational study of changes in objectively measured physical activity during weight loss in dogs. Journal of Small Animal Practice, 55 (11), 566–570. doi: 10.1111/jsap.12273

5. Nardocci, M., Leclerc, B., Louzada, M. et al. (2019). Consumption of ultra-processed foods and obesity in Canada. Can J Public Health,110, 4–14 doi: 10.17269/s41997-018-0130-x

6. Lokes-Krupka, T.P., Kanivets, N.S., Shatokhin, P.P., Kravchenko, S.O., Burda, T.L (2018). Prevalence rate of obesity in the domestic cat depending on its genesis in Poltava. Scientific and Practical Conference, International Trends in Science and Technology. Warsaw, Poland, 3-5.

7. Lokes-KrupkaT. P. (2019). Klinichnyy vypadok alimentarnoho ozhyrinnya u sobaky. Visnyk Poltavs′koyi derzhavnoyi ahrarnoyi akademiyi, (2), 213-218. doi:10.31210/visnyk2019.02.28 [In Ukrainian].