



RETROSPECTIVE CLINICAL STUDY FOR OBESITY IN DOGS

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Abstract: Obesity has been reported as a modern-day epidemic in companion animals and is the most common nutritional disorder in dogs that can lead to pathological issues or impaired functions. The study aimed to evaluate the prevalence and risk factors associated with overweight and obesity in dogs. The medical records of client-owned dogs admitted to the Internal Medicine Clinic of the Faculty of Veterinary Medicine in Timisoara from January 2018 to December 2023 were retrospectively reviewed. Inclusion criteria in the study consisted of recording all details of physical examination, body condition score assessment, complete diet and lifestyle information, and specification of a positive diagnosis. Dogs with BCS greater than six on the World Small Animal Veterinary Association's scale of 1 to 9 were included in this study. Blood serum biochemical parameters, including aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (ALP), gamma-glutamyltransferase (GGT), urea, creatinine, triglycerides, cholesterol, were determinate using Rx Daytona automated biochemistry analyzer (Randox) by routine wet biochemistry methods. A complete blood count was performed using a ProCyte Dx analyzer (IDEXX). In this study, the significant risk factors for obesity were female gender, neutering status and elderhood. The most common associated diseases were congestive heart failure, hypothyroidism and hyperadrenocorticism. Obesity was related to a significant increase in cholestasis enzymes, which may reflect fatty liver load.

• Introduction

Obesity is a common condition in small animal veterinary practice and one of the most important forms of malnutrition. Obesity is manifested by accumulation of excess body fat and can lead to pathological issues or impaired function. Overweight companion animals have a shortened life span and their quality of life is affected. These animals are predisposed to other conditions including osteoarthritis, diabetes mellitus and certain types of neoplasia. There are several factors that increase the chance of obesity, like breed (Pug, Golden Retriever, Beagle), age, sex and neutered dogs are more susceptible. Overweight pets are 10% - 20% above ideal body weight, while obese pets are more than 20% above ideal body weight.

• Material and method

The medical records of client-owned dogs admitted to the Internal Medicine Clinic of the Faculty of Veterinary Medicine in Timisoara from January 2018 to December 2023 were retrospectively reviewed. Inclusion criteria in the study consisted of recording all details of physical examination, body condition score assessment, complete diet and lifestyle information, and specification of a positive diagnosis. Body condition score was evaluated by a 9-point scheme proposed by World Small Animal Veterinary Association (Figure 1).

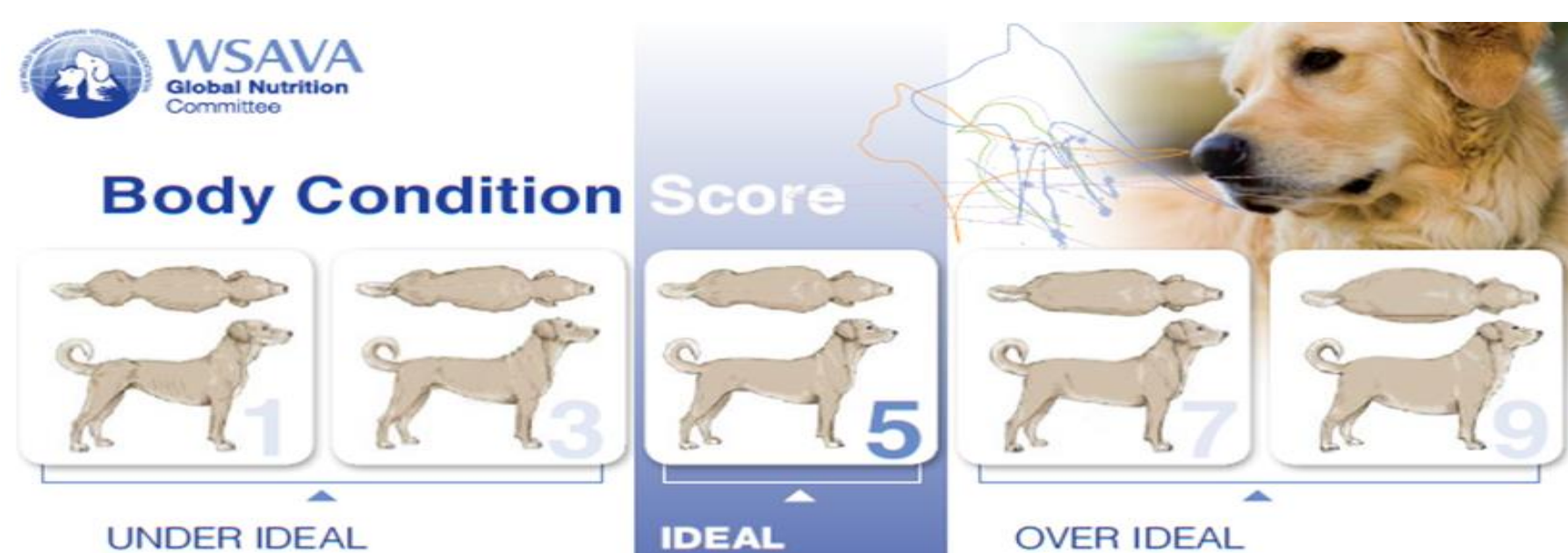


Figure 1. Canine body condition score system (9-point scale). Source: Global Nutrition Committee Toolkit courtesy of the World Small Animal Veterinary Association.

A total of 1196 medical records were reviewed, of which in this study were evaluated the observation sheets from 81 dogs that had a BCS ≥ 6 . For each overweight or obese dogs the physical examination data, combined with clinical signs, observation sheets, blood test results and associated diseases were recorded. Blood serum biochemical parameters, including aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (ALP), gamma-glutamyltransferase (GGT), urea, creatinine, triglycerides, cholesterol, were determinate using Rx Daytona automated biochemistry analyzer (Randox) by routine wet biochemistry methods. A complete blood count was performed using a ProCyte Dx analyzer (IDEXX).

• Results and discussions

The overall prevalence of obese and overweight dogs from this study was 6,77% (Figure 2). Concerning the gender, out of 81 cases of overweight and obese dogs, 47 were females (58%) and 34 were males (42%) (Figure 3).

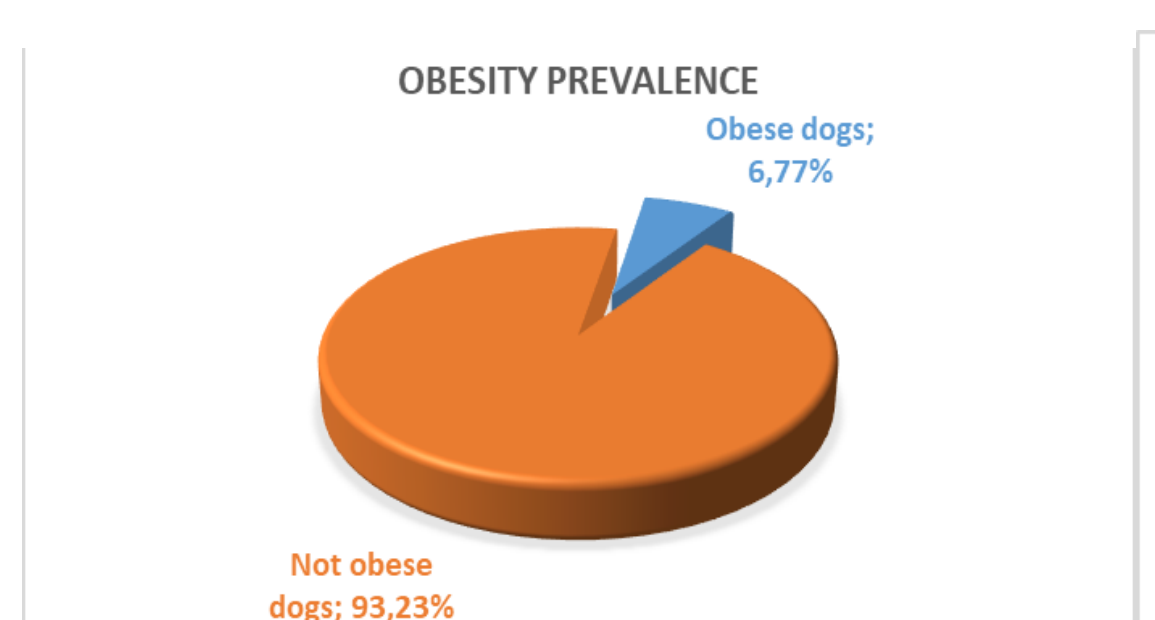


Figure 3. Overall prevalence of obese and overweight dogs.

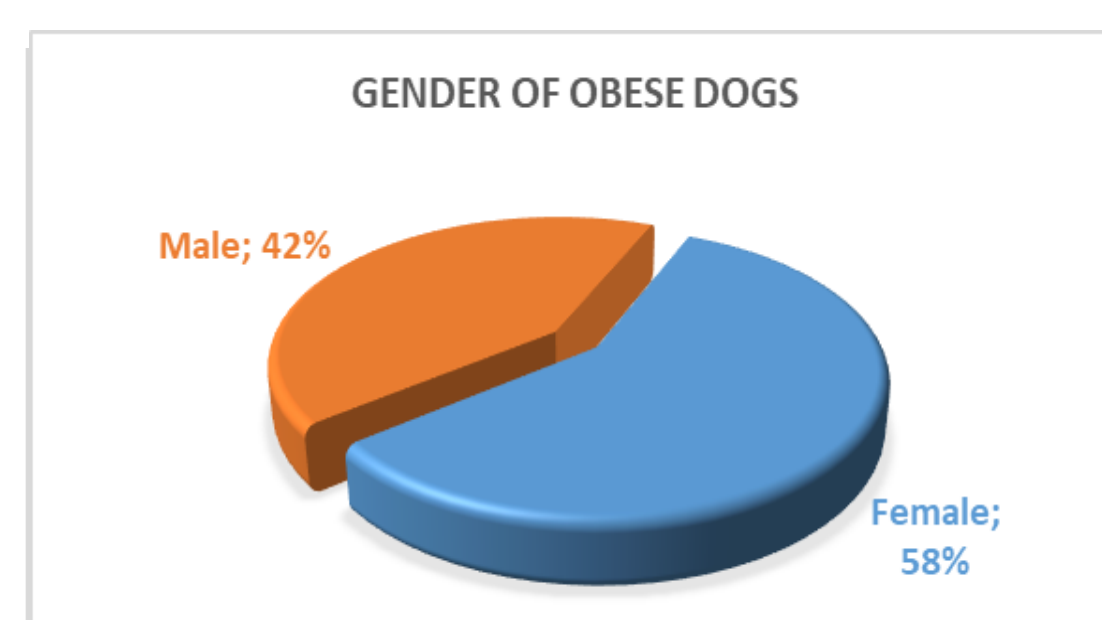


Figure 3. Gender of obese dogs percentage.

Referring to the neutering status, out of 81 cases 58 were not neutered and 24 were. Regarding age, out of 81 cases 3 were 1 - 3 years old, 11 were 4 - 6 years old, 22 were 7 - 9 years old, 33 were 10 - 12 years old and 12 cases were more than 12 years old (Figure 4).

Referring to the breeds, out of 81 dogs, 33.3% were crossbreeds, 17.3% were Bichon, 4.9% Poodle, 3.7% Golden retriever, 3.7% Amstaff, 3.7% Westie and other like: Chihuahua, Rottweiler, French bulldog, Labrador, Cocker spaniel and other breeds. Concerning the types of diet, out of 81 cases 34 were fed with dry food, 23 were given wet food and 24 were given both dry and wet food.

Associated diseases with overweight and obesity of dogs from this study include hypothyroidism, congestive heart failure, chronic osteoarthritis, acute pancreatitis, diabetes mellitus, tracheal collapse, neoplasia, urinary incontinence, hyperadrenocorticism and other diseases (Figure 5).

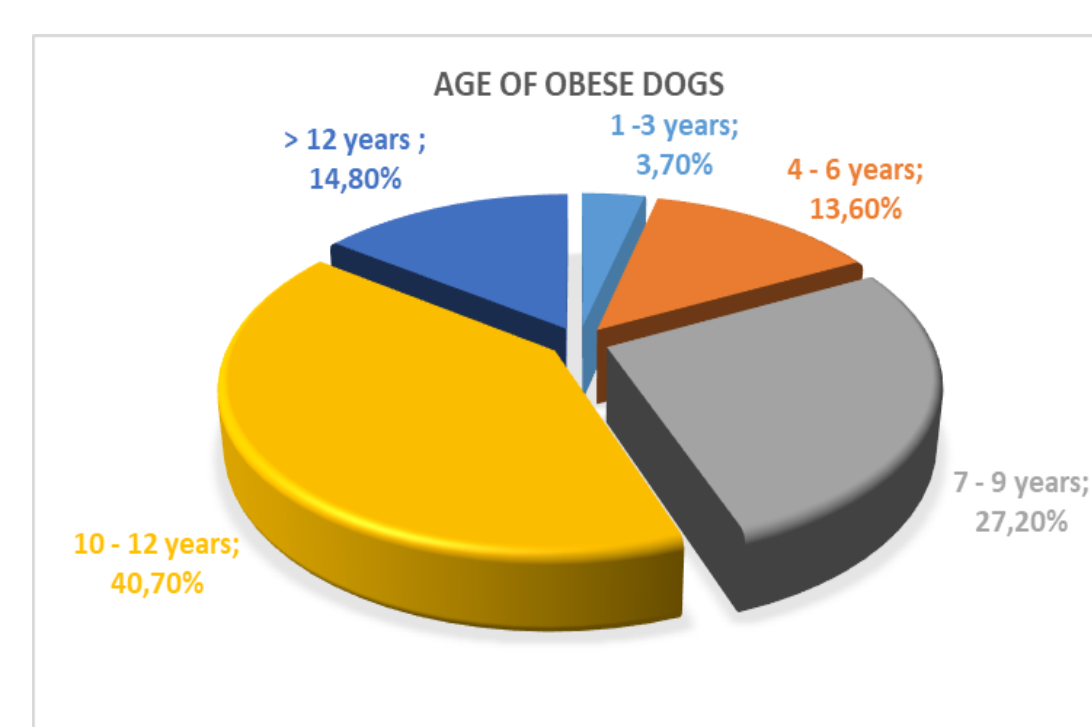


Figure 4. Age of obese dogs percentage.

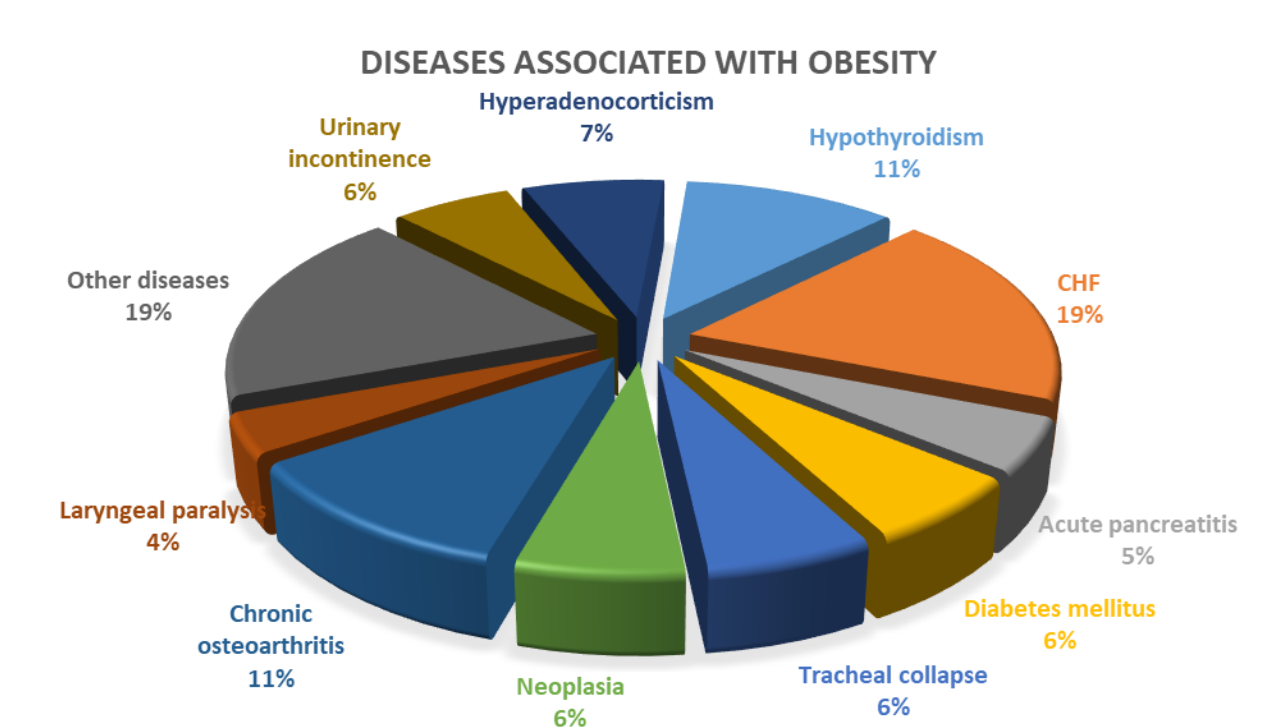


Figure 5. Prevalence of associated diseases in overweight and obese dogs

Regarding the changes in the biochemical parameters tested specified above, only ALP and GGT showed significant changes in obese dogs compared to healthy dogs, the other parameters having values within normal limits or with very small magnitude changes. (Figures 6 and 7).

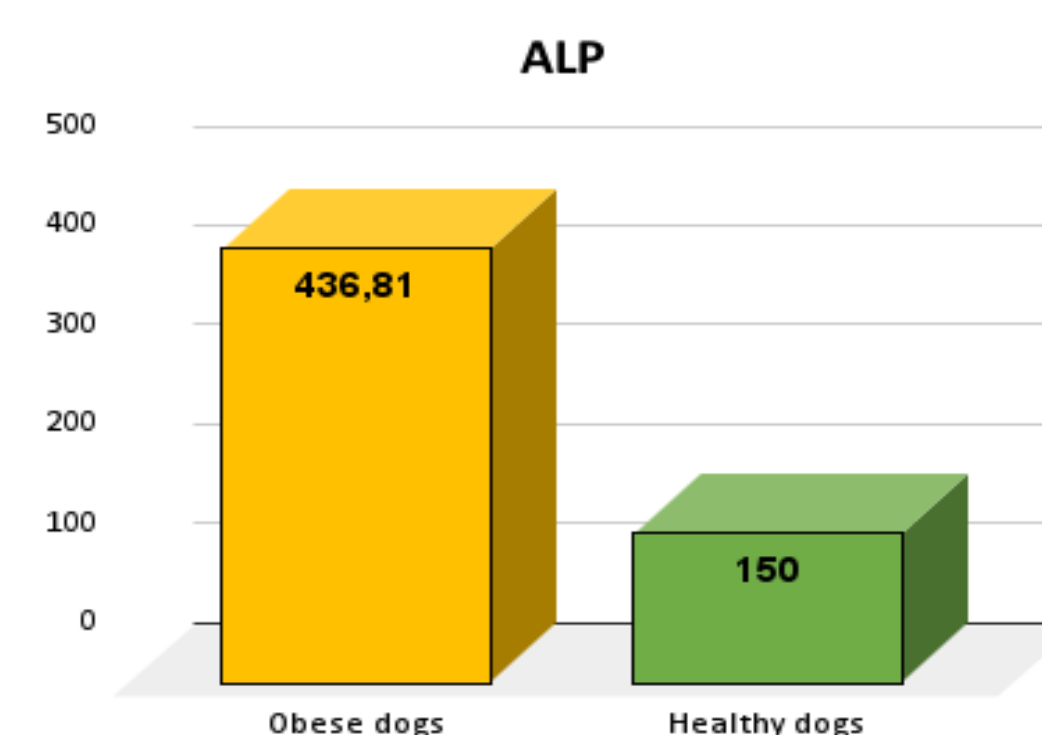


Figure 6. Alkaline phosphatase (ALP) serum activity in obese dogs and healthy dogs

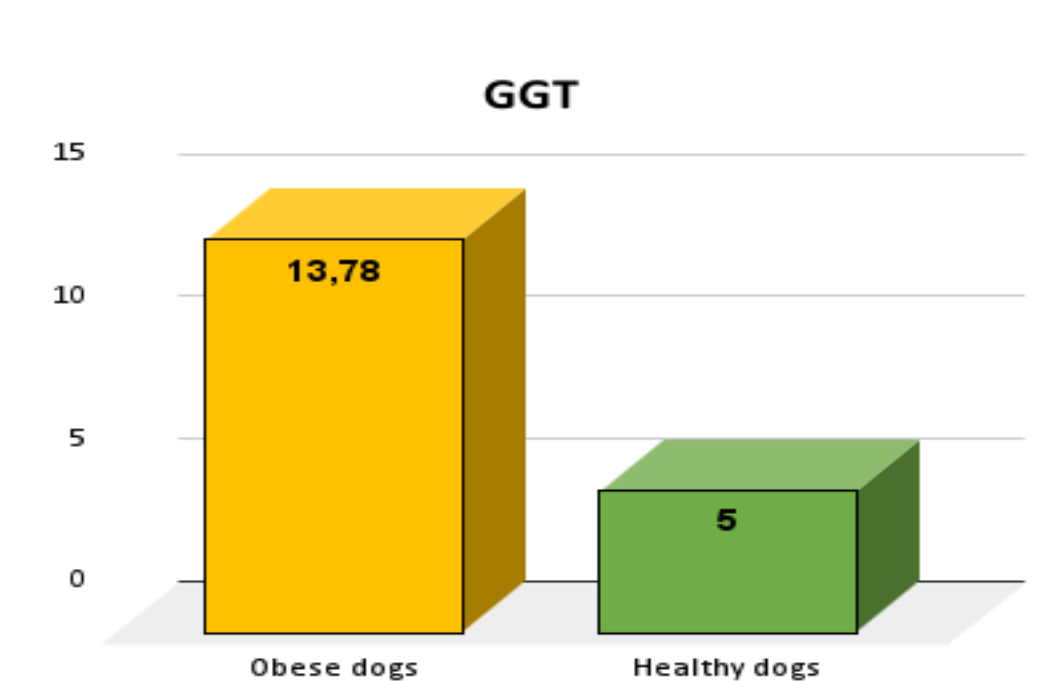


Figure 7. Gama glutamyltransferase (GGT) serum activity in obese dogs and healthy dogs

• Conclusions

The most common associated diseases were endocrine disorders and congestive heart failure. Obesity was related to a significant increase in cholestasis enzymes, which may reflect fatty liver load. Obesity in the dogs of this study was associated with a large number of conditions that may contribute to the impairment of the patient's quality of life.