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Obesity: Risk Factor in Geriatric Aged Cats

La obesidad: Factor de riesgo en gatos de edad geriátrica

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Abstract

The objective of this study was to determine the prevalence of obesity as a risk factor in geriatric-aged cats. By its approach, the study was quantitative, non-experimental, cross-sectional, descriptive, correlational and observational design. A total of 100 geriatric-aged cats were sampled, with a non-probabilistic sampling type, using a directed or intentional sampling technique; the inclusion criterion was considered to be geriatric-aged cats≥ 7 years old. A measuring tape, scales and a structured questionnaire related to risk factors such as age, breed, weight, height, environment, exercise habits, type of feeding and physiological condition were used as measuring instruments. The physical method was used to measure the Body Score Condition (BSC) of 5 points of Thatcher, based on external morphological characteristics such as: observing and palpating the difficulty to palpate the ribs, if they presented thick layer of fat, bony prominences covered by a thick layer of fat, hanging ventral bulge and widened back. There were 10% of cases with obesity and 14 cases with overweight in geriatric-

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aged cats. The determining factors associated with obesity in geriatric-aged cats are the mixed breed, age between 7 and 10 years, larger cats and neutered cats.

Key words: obesity, nutritional disease, endocrine system, geriatrics.

Resumen

El objetivo de este estudio fue determinar la prevalencia de la obesidad como un factor de riesgo en gatos de edad geriátrica. Por su enfoque, el estudio fue cuantitativo, diseño no experimental, trasversal, descriptivo, correlacional y observacional. Se muestrearon 100 gatos de edad geriátrica, con tipo de muestreo no probabilístico, utilizando técnica de muestreo dirigido o intencional; como criterio de inclusión se consideró a los gatos de edad geriátrica ≥ 7 años. Se utilizó como instrumento de medición una cinta métrica, balanza y un cuestionario estructurado, relacionado con los factores de riesgo como la edad, la raza, el peso, la talla, el entorno, los hábitos de hacer ejercicios, el tipo de alimentación y la condición fisiológica. Se utilizó el método físico para medir la condición corporal Body Score Condition, (BSC) de 5 puntos de Thatcher, en base a características morfológicas externas cómo: observando y palpando la dificultad de palpar las costillas, si presentaban capa gruesa de grasa, prominencias óseas cubiertas por una capa gruesa de grasa, abultamiento ventral colgante y espalda ensanchada. Se obtuvo el 10% de casos con obesidad y 14 casos con sobrepeso en gatos de edad geriátrica, los factores determinantes que se asocian a la obesidad de edad geriátrica están la raza mestiza, la edad comprendida entre los 7 – 10 años, los gatos con mayor talla y los gatos castrados.

Palabras clave: obesidad, enfermedad nutricional, sistema endocrino, geriatría.

Introduction

Considering that geriatric-aged cats are part of our lives, it is important to recognize certain pathologies such as overweight and obesity, which affect the quality of life, life expectancy, as well as the difficulties that may arise at the time of auscultation, radiographs, palpations, surgeries and anesthetic protocols. Obesity is defined as an excess accumulation of body fat causing an imbalance in the cat's organism, therefore, it is considered a pathology that has as a consequence the affectation of the pet's health. (Tvarijonaviviute et al., 2008; Jeusette et al., 2011; Gonzalez & Bernal, 2011; Towell, 2013; Osto & Lutz, 2015; Rocha, 2020; Sagrero-Del Moral & Castañeda-Ortega, 2021). But it is not only an independent disease, obesity is part of one of the triggering parameters of the metabolic syndrome (Mendivil, 2005; Pereira-Rodríguez et al., 2016) and a variety of risk factors that predispose older cats to pathological diseases such as obesity, cardiovascular problems, diabetes, hypertension, hypertension, diabetes, hypertension, and other diseases. (Freitas et al., 2017; Segami, 2021)diabetes, hypertension, insulin resistance and dyslipidemia (Ponce et al., 2010) and dyslipidemia (Wei et al., 2011; Perez, 2014; Nassar de Marchi et al., 2016; Pereira et al., 2016; Freitas

et al., 2017; Freeman et al., 2020)Similarly, age, breed, body condition and characteristics associated with social behavior, especially for not complying with one of the principles of the five freedoms of animal welfare such as feeding, (Manteca et al., 2021) constitute predisposing factors to develop obesity, which is one of the most frequent nutritional diseases in the cat.

The causes of obesity are multifactorial, and there are many genetic and environmental factors as indicated by Zoran (2010). The most recent studies have revealed that the incidence rate of obesity or excess body weight in cats ranges from 16 to 63%. (O'Connell et al., 2018)making it the most common nutritional disorder in these companion animals commonly caused by eating disorders, sedentary lifestyle, physiological condition and age. (Michel et al., 2005)In addition, it is associated with important metabolic and hormonal changes in the body. (Zoran, 2010).

The etiology of obesity is mainly based on the imbalance between energy intake and energy expenditure, but there are numerous factors that contribute to this condition (Guimaraes & Tudury, 2006). In conditions of positive energy balance, energy intake is greater than energy expenditure, so this energy accumulates in the form of adipose tissue causing weight gain and, consequently, obesity.

A cat is considered obese when the average weight increases by 20%. (Peña, 2015)However, examining the body condition of the cat is one of the simplest methods to determine if the animal is obese or thin. (Jeusette et al., 2011). In Ecuador, in the area of veterinary medicine, there is no evidence of the prevalence of obesity in cats of geriatric age, since there are no records of the body condition of pets. (Segami et al., 2021)Therefore, this article aims to report the prevalence of obesity and overweight as a risk factor in geriatric cats, so that veterinarians implement these good practices and guide owners of geriatric cats to implement a better diet, reducing caloric intake and implementing physical activity in this age category.

Materials and methods

The type of study was quantitative, non-experimental, cross-sectional, descriptive, correlational and observational research design. The Unit of Analysis was the Geriatric Age Cats; as for the size of the cat population was 553 066, the sample size was 45 cats; the Working in Epidemiology software was used to detect if there is a proportion of geriatric age cats with obesity, with a confidence level of 95%, expected prevalence of 3% and an accepted error of 5%.

According to the author, the inclusion criteria were considered as follows. Hoyumpa Voag et al. (2017).The inclusion criteria were, according to the author, mature cats between 7 - 10 years old, senior cats between 11 - 14 years old and geriatric cats over

15 years old; as a sampling technique, a directed or intentional sampling was applied, the duration of the research was three months. The owners of the cats were verbally informed of the objective of the research, which allowed us to establish the prevalence of obesity in mature, senior and geriatric cats.

The research technique used was the survey, a measurement instrument was developed, a structured questionnaire with demographic data of the owner, the pet, special characteristics and environmental data, in addition, a scale, tape measure and the 5-point Body Score Condition chart (McGreevy et al., 2015; Suarez, 2015; Thatcher et al., 2000) were also used. The body zones established in the BSC Technique (ribs, spinous processes of the lumbar vertebrae, pelvic bones, bony prominences, waist, abdomen, neck and extremities) were observed and palpated in search of the presence or excess of muscle mass and adipose tissue, described by Thatcher et al. (2000); likewise, the data were recorded in the Excel database, and were evaluated using the SPSS software, version 26.

Result

Of the 100 cases analyzed, 10 (10%) were positive for obesity, and with respect to the estimate of the confidence interval was CI95% = (0.04, 0.1598), which that indicates us to that there is a 95% confidence that the proportion of the body condition of the population analyzed on geriatric age cats present obesity between 4.02 (lower limit) and 15.98% (upper limit), generating an average of 10%, a unque el porcentaje obtenido es inferior y no significativo, comparado con el 30% determinado por Lund et al. (2005); sin embargo, nuestro porcentaje encontrado (10%), debe ser tomado en cuenta por la comunidad veterinaria y propietarios de las mascotas, con el fin de cuidar la condición corporal de esta categoría de edad, para de esta forma, mejorar la calidad de vida y prolongar la esperanza de vida de los g a tos de edad geriátrica. On the other hand, it is important to highlight that in a research carried out by Wei et al. (2011)showed that by adding more water to the cats' food, their body weight decreased.

With respect to the geriatric age category, they were grouped from the age of 7 years, but the distribution of the body condition of obesity in the ages between 7-10 years, where 10 cases were found (100%); it is important to mention that the body condition of overweight was also analyzed in the geriatric age cats, taking as reference ages between: 7-10 years, obtaining 14 cases (53.8%); between 11-14 years, 11 cases (42.3%) and more than 15 years, 1 case (3.8%), which shows that the proportions of the age categories with overweight evaluated statistically are not significant, but they are to be considered as a preventive measure to the health problem that is obesity and that is influential in the quality of life of the geriatric age cats.

Notably, it is necessary to highlight with respect to a l sex, that in our study. It was determined that of the 10 positive cases for obesity, it was not a predisposing factor, since that for both sexes there were 5 cases for males and 5 cases for females, representing 50% respectively of obesity in the geriatric age. Lund et al. (2005)where males present greater obesity than females without a clear explanation.

In the evaluation of the breeds, the following cases were presented: Mongrel, 6 (11.8%), Common European, 2 (14.3%), Russian Blue, 1 (16.7%) and Birman, 1 (50%), determining that the influence of the breed on the prevalence of obesity in geriatric cats was not significant; however, authors such as Scarlett et al. Lund et al. (2005)(1999), found that mongrel cats were twice as likely to be obese as purebred cats, 6 (11.8%). Also, the environment where geriatric age cats live was evaluated, establishing the highest percentage for those living inside the home 9 (90%) and for the that have an internal and external environment, 1(10%) was found. All these observations are also related to what was determined by Kienzle and Bergler (2006).

Another risk factor evaluated was the type of food, where 50% was obtained for the obese body condition of geriatric cats, fed with balanced and mixed food, it is necessary to emphasize that in the research conducted by McMillan (2013), he obtained a higher casuistry in cats fed with homemade food to .

Likewise, the geriatric-aged cats sampled did not perform any physical activity, 10 (100%), however, there are few studies on this subject. With respect to the sterilized geriatric-aged cats, they were the ones that obtained the highest percentage of obesity, 10 cases (100%), and applying the binary logistic regression analysis between the dependent variable body condition obesity and the independent variable physiological condition (whole and neutered), as well as the categorical predictor variables of not obese and obese, as well as the categorical predictor variables of non-obese and obese, using the Wald Chi-square statistic and the corresponding p-value, the goodness of fit of the regression models was evaluated by means of the Hosmer-Lemeshow statistic. The 95% confidence interval (95% CI) was used to estimate the precision of the odds ratio (OR), which gave us in the beta exponent column that are the odds ratios that include zero, therefore, the results of our research are not statistically significant, similarly 19% and 52% were determined without statistical significance by the authors: Scarlett et al. (1998); Robert-Yes (1999), Allen et al. (2000), Russell et al. (2000); and Lund et al. (2005).

Conclusions

It was determined that according to the Body Score Condition (BSC) of 5 points of Tams, in the 100 cats analyzed for overweight body condition, 14 cases were obtained and for obese 10 cases. The determining factors associated with obesity in geriatric age

are the mongrel breed, the age between 7 and 10 years old, cats with larger size, neutered cats, and cats that have been castrated; This shows that, although in the statistical evaluation it is not a significant percentage, there is a percentage of cats of geriatric age that do not have the ideal body condition that corresponds to their age, so that , it is recommended that veterinarians train the owners of the animals on the diets and rations according to the geriatric age category, in order to avoid overweight and obesity; In addition, it is necessary that the owners implement the culture that their pets perform some physical activity, so that they have a better quality of life and increase their life expectancy.

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