



The Changing Patterns in Referral Rates of Geriatric Cats and Dogs to an University Clinic

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Abstract

Improving quality of care and nutrition of pet animals and advanced diagnosis and treatment by developing technologies, lead to an increase in survival rate. As the present authors were unaware of finding documented reports for several diseases, it was aimed to investigate the number and health status of geriatric cats and dogs which were brought to Internal Medicine clinics of our faculty's training and research hospital within six years. Twenty-four cats and 10 dogs enrolled in the study were found to be healthy, whereas multiple health concerns were diagnosed in totally 1354 animals (n=403 for cats, n=951 for dogs). Increase in survival rate within 6 years was determined as 27.7% increase for cats and as 5.3% increase for dogs. The urinary system diseases for cats and cardiovascular system diseases for dogs were found to be the most frequent diagnosis. Geriatric animal rates varied between 4.2 and 12.3% for cats and 6.2 and 15.7% for dogs within years which were not expected as higher.

Özet

Üniversite Kliniğine Getirilen Geriyatrik Kedi ve Köpek Oranlarındaki Değişimler

Gelişen teknoloji sonucu gerek beslenme gerekse tanı ve tedavi yöntemlerinin kullanılmasıyla evlerimizde beslediğimiz kedi ve köpeklerde hayatta kalma oranının yükseldiği gözlenmektedir. Ülkemizde konu ile ilgili bir araştırma yapılmış olmadığından, bu çalışma ile son altı yıl içinde Fakültemiz Eğitim ve Araştırma Hastanesi, İç Hastalıklar ABD polikliniğine getirilen geriyatrik kedi ve köpeklerin oranı ve bu hayvanların yaşlarına göre sağlık durumları değerlendirildi. 1354 hayvanın dahil edildiği çalışmada, 24 kedi ve 10 köpekte herhangi bir hastalığa rastlanmazken geri kalan hayvanlarda (n=403 kedi, n=951 köpek) çeşitli sağlık sorunları olduğu tespit edildi. Son altı yıl içinde kedilerin yaşama süresinin %27,7, köpeklerde ise %5,3 oranında arttığı görüldü. Kliniğimize gelen geriyatrik pet hayvanlarından kedilerde en çok üriner sistem, köpeklerde ise kardiyovaskular sistem hastalıklarının geliştiği izlendi. İç Hastalıklar kliniğimize gelen hastalarda geriyatrik kedi oranının %4,2-12,3, köpek oranının ise %6,2-15,7 arasında değişkenlik gösterdiği bulundu.

Introduction

Geriatrics or geriatric medicine is a specialty which concerns on health problems of older patients and treatment of them. Aging in animals as in humans occurs by development of predisposition to diseases as a result of a breakdown of the relationship between body systems due to acquired diseases and environmental conditions. Some of the diseases like ischemic heart disease and diabetes mellitus lead to disorders in some tissue and organs, and finally death (Fortney, 2004). Death at a young age usually developed by a disorder, whereas death in geriatric human and animals are believed to be generally expected results. However, metabolic functions might be fully regulated even if in an aged animal. Additionally, wear and defects in cells,

tissues and organs may make the elder animal weaker against diseases.

Cats over 10 years, dogs over 8 years are considered to be geriatric (Chastain, 2004). Life span may differ according to breed, nutrition and care conditions. Therefore, most of the animals can succumb to death by aging.

Along with the growing of technology, new advancements in animal care and nutrition and diagnosis and therapy methods are developing every day. In this retrospective study, we aimed to assign the number of geriatric dogs and cats and the rates of disorders seen in them which were referred to internal medicine clinics of Veterinary Faculty Teaching Hospital.

Materials and Methods

4691 cats and 8955 dogs brought to Istanbul University, Veterinary Teaching and Research hospital, Internal Medicine clinics between 2008 and 2013 were retrospectively scanned for this research. Geriatric animals from these recorded patients of Internal Medicine were included in the study. Annual referral rates of geriatric animals and disorders were determined. Age, breed, sex, health status were noted and diseases if existing were classified according to system based diagnosis as cardiovascular, respiratory, urinary, gastrointestinal, neurology, endocrinology, dermatology and neoplasia. The animals who have no disease were described as healthy. The animals with undetermined disorders were included in undefined group and systemic infections, behavioural disorders

etc. and the patients who were referred to other units were defined as others. All results about geriatric animals and their disorders were stated in percentage terms.

Results

4691 cats and 8955 dogs were scanned from records. 403 cats and 951 dogs of them were determined as geriatric (Figure 1).

The most recognized breed for cats was found as mix breed (74%), Siamese (14%) and Persian (8%), whereas Terrier (47%), mix breed (12%), and evenly Cocker Spaniel and Golden Retriever (8%) respectively for dogs.

Age of geriatric cats ranged from 10 to 23 years of age, while in geriatric dogs it was determined to be between 8 and 20 years of ages (Figure 2).

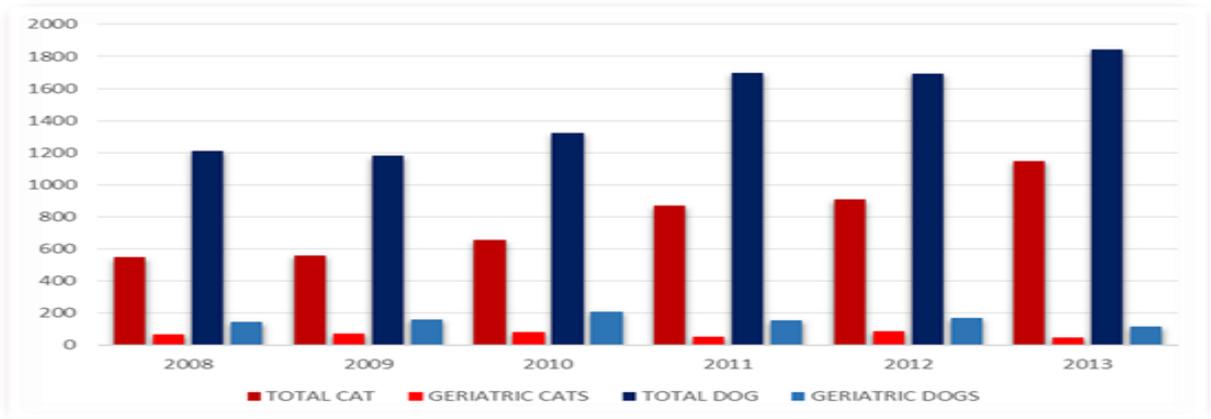


Figure 1. Distribution of geriatric cats and dogs per year.

Şekil 1. Geriyatrik kedi ve köpek sayılarının yıllara göre dağılımı.

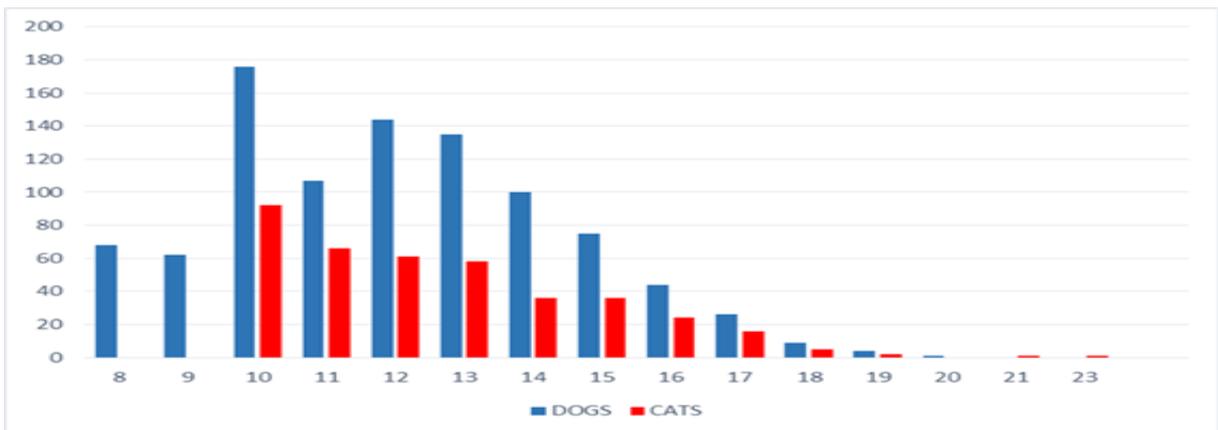


Figure 2. Age range in cats and dogs.

Şekil 2. Kedi ve köpeklerde yaş aralığı.

253 cats (63%) were female and 150 cats (37%) were male. Also 439 dogs (46%) were female and 512 dogs (54%) were male.

Over 6 years, only 24 cats and 10 dogs brought to our clinic were determined to be healthy. The disorders of the remaining 379 cats and 941 dogs were

categorized basically according to associated body system (Table 1). The disorders were evaluated under ten different categories. The most recognized diseases of geriatric cats were found to be urinary system disorders, whereas cardiovascular system disorders were mostly observed in dogs.

Table 1. Distribution of the disorders in geriatric cat and dogs within years.

Tablo 1. Geriyatrik kedi ve köpeklerde görülen hastalıkların yıllara göre dağılımı.

Diseases on Base of The Organ System	2008		2009		2010		2011		2012		2013		Total	
	Cat (n)	Dog (n)	Cat (n)	Dog (n)	Cat (n)	Dog (n)	Cat (n)	Dog (n)	Cat (n)	Dog (n)	Cat (n)	Dog (n)	Cat (n)	Dog (n)
Respiratory	3	8	5	13	6	13	9	22	4	11	3	10	30	77
Gastrointestinal	12	11	9	17	9	16	7	9	15	24	10	20	62	97
Urinary	17	32	16	24	21	33	21	15	48	51	14	21	137	176
Cardiovascular	4	37	4	43	3	51	2	40	2	40	3	35	18	246
Dermatology	5	17	8	15	5	11	3	13	4	15	3	7	28	78
Endocrinology	11	9	15	6	8	7	2	4	1	5	3	5	40	36
Neurology	4	8	1	3	1	5	-	-	-	1	-	-	6	16
Neoplasia	-	-	-	-	-	-	2	14	1	7	2	7	5	28
Healthy	1	4	4	7	4	9	-	1	1	2	-	1	10	24
Other	9	24	13	22	11	28	3	4	8	13	5	9	49	100
Undefined	6	13	7	9	5	15	2	31	1	-	5	1	26	69

Discussion

As a term "geriatric" describes a life phase in which a progressive weakening in physical condition, functions of organs, sensory functions, mental functions and immune functions starts to occur. Fibrosis develops in gastric, lung and hepatic structures. Pancreatic enzyme secretion and lung elasticity reduced. Expiration capacity decreases. Glomerular filtration rate decreases and kidneys become smaller. Cardiac output decreases and valvular fibrosis starts to occur. Fat cells increase in bone marrow and number of cells decrease in nervous system (Fortney, 2004). In this manner, dysfunctions in body systems start to occur in geriatric animals.

When we look at the total number of geriatric dogs and cats, we noted that limited number of geriatric animals (8.6% for cats, 10.6% for dogs) brought to faculty clinic. However geriatric patients need more intensive care and medical support. Of the geriatric cats (n=403), 137 were diagnosed with a urinary system

disorder, whereas 246 of 951 geriatric dogs were having a diagnosis of cardiovascular system disorder. Chronic kidney disease is common in cats, especially aged ones (Hanzlicek et al., 2012). Approximately more than one cat in four was diagnosed with any of urinary system disorder. Besides, urinary system disorders were found to be a serious problem in geriatric cats (Pugliese et al., 2005). The second common diagnosis for dogs were found to be urinary system disorders with a rate of 18.5%. The structural and functional alterations in kidney affect 15% of geriatric dogs (over 10 years old) and 33% of geriatric cats (over 15 years old) (Pugliese et al., 2005). Glomerular diseases are also cause of chronic kidney disease in dogs but seem to be less common in cats. In randomly selected dogs, the incidence of glomerular disease is reported to be between 43% and 90% (Vaden, 2011). Glomerular disease can develop in dogs at any age, but are probably more common in middle-aged to older dogs. The average age of 375 dogs

with a variety of glomerular diseases reported in two studies was 8.3 years (Center et al., 1987; Cook and Cowgill, 1996). Systemic hypertension is common in older cats and is very frequently associated with chronic kidney disease and has also been linked with hyperthyroidism and diabetes mellitus. Carter et al (2014) diagnosed hypertensive ocular lesions in 14% of geriatric cats that lives in Auckland, New Zealand. Systemic hypertension can cause a disease with a rich arteriolar supply such as the kidneys, eyes, myocardium and brain (Carter et al., 2014). However, unlike human beings, hypertension is known to be an uncommon problem in geriatric dogs. On the other hand, the real incidence of arteriosclerosis and related ischaemic may be underestimated (Guglielmini, 2003). In a study conducted on 9248 dogs, the second most common cause of death was found as cardiac diseases (Eichelberg and Seine, 1996). According to our data, the most prevalent diagnosis for geriatric dogs was found to be cardiovascular system diseases. However, there are several limitations in our study, including data based on different breeds and recorded current diagnosis, although most dogs might have multiple problems and aging differs according to breed.

No generally accepted description of a "geriatric dog" is available (Davies, 2012), however American Animal Hospital Association define it as the last 25% of expected life span (AAHA, 2005). There is pretty much empirical information claiming that the life span of dogs is associated with the body. Small pure breed dogs live longer than giant pure breed dogs (Patronek et al., 1997). The underlying mechanism effecting metabolic rate is not known but smaller animals with higher metabolic rates are under higher oxidative stress (Sohal and Weindruch, 1996). In our study geriatric animals were evaluated according to breed, top three recognized breed for dogs were found to be relatively, whereas terrier (47%), mix breed (12%), and evenly Cocker Spaniel and Golden Retriever (8%) for dogs. This relationship is not as obvious as dogs in other mammalian species. For instance, 16 year old Beagle would be equivalent to an 88-92 year old human, whereas a 16 year old Great Dane is equivalent to 127.1 year old human (Patronek et al., 1997). In this study, to reach a homogenous investigation, dogs over 8 years old were evaluated by ignoring the breed differences. It is thought that further studies are needed to make a new description for geriatry depending on breed and individual characteristics.

Substantial number of animals (n=62 cats and n=97 dogs) were recorded with diagnosis of gastrointestinal problems. As shown in Table 1, the number of animals was getting increased by year. It might be due to

improvement of diagnosis by new imaging settings. As usually no alteration was detected in blood analysis of animals with gastrointestinal problems, advanced imaging techniques were required in diagnosis. Alimentary neoplasies are considerable problems in geriatry, besides folate, cobalamine and iron deficiencies might lead to gastrointestinal disorders (Neiger, 2004).

According to our data, relatively lesser numbers of animals (9.9% of cats; 3.7% of dogs) were found to be affected with endocrinopathy according to other disorders. On the other hand, effects of aging leads to increased function of most endocrine organs (thyroid, reproductive, pancreas) plus increased activation of hypothalamic-pituitary- adrenal axis and presence of endocrine disease may be masked by coexisting illnesses and medications (Boari and Aste, 2003). In a study (Bruyette, 2001) laboratory test evaluation for endocrine disorders were performed on apparently healthy 90 dogs and 100 cats over 7 years old, and 20% of canine population and 17% of feline population was found to have clinically significant endocrine disease. Presence of unnoticed patients might affect the number of the animals having endocrine disorders in our study. It was found that laboratory results without indicating of an existence of a disease may have been affected according to aging and interpreting laboratory results was highly recommended for senior patients (Bruyette, 2001). Non-endocrine origin dermatological problems were evaluated under dermatology system in Table 1 (n=28 cats, n=78 dogs). There is limited research made on dermatological problems of geriatric pets. In one research, detailed analysis was performed on 14 dogs between 12-17 years old and no significant alteration according to aging (except 17 year old dogs) was found by histologically. Especially glandular structure of the skin differs by aging (Baker, 1967).

Neoplastic disorders were increasingly detected in last years, however it constitutes a small proportion of total disorders detected. Webb et al. (2012) detected abnormal laboratory analysis results in 54.7% of dogs and abnormal ultrasound screening in 64.2% healthy geriatric dogs. Ultrasound examination revealed occult splenic masses in 52.8% (28/53) of dogs examined. The hemangiosarcoma occurs predominantly in older dogs between 8 and 10 years of age. The mean time of diagnosis is 9 to 12 years (Frankhauser et al., 2012). By greater use of imaging techniques in veterinary practise, neoplastic diseases for geriatric patients will begin to be more noticed.

Lesser number of geriatric animals (n=6 cats, n=16 dogs) with neurologic disorders were detected. By aging, vision and hearing function declines. Associated reflexes and reactions of the animals may also vary. Therefore all

changes detected should not be construed as a neurologic problem as in young animals (Hoskins, 2004).

In contrast to human who commonly die from respiratory diseases, old cats and dogs rarely die from canine/feline respiratory complex (Schutz et al., 2010). Our results showed that older animals coming from respiratory diseases were in inconsiderable level than the other diseases (n=30 for cats, n=77 for dogs). Merely metastatic lung diseases were evaluated under the neoplastic diseases. In a study carried out on 45 dogs over 9 years old, it was shown that increased sleeping (31%), loss of hearing (29%) or sight (20%) and slowing down (20%) were the most recognized alterations detected by the owners, however potentially life-threatening signs due to respiratory distress, palpable masses and metastatic lung disease were often failed to recognize by owners (Davies, 2012).

Over the years, an increase in the number of animals are remarkable, while there is a reduction in the number of geriatric cats and dogs brought to internal medicine clinics of our faculty. The young animal population also increases, as the number of household pet animals are increasing steadily in Istanbul. In the long term potential of geriatric patients are expected to be more important. As well as there is a prejudice in the pet owners, as the treatment process is more abrasive for vulnerable geriatric patients. However, geriatric animals require more special health care and regular inspections than young animals; only 2.4% of cats and 2.5% of dogs brought to our university clinic were found as healthy. Pet owners should be informed in care of geriatric animals and dedicated geriatrics services of veterinary clinics with special facilities should be provided.

Subclinical diseases are known to be common in the senior cat and dog. It is concluded that veterinarians should spend more time for evaluation of geriatric patients, and more laboratory tests are necessary to prevent under diagnosis to miss out the subclinical illnesses. To increase the awareness among pet owners is in the responsibility of the veterinarian which will be possible by giving particular importance in geriatrics in the veterinary medicine. It is thought to improve revealing unrecognised disorders and quality of life in elder patients by utilizing gerontology research on veterinary clinics and developing diagnostic investigations in future.

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