Researches Regarding the Values of Some Electrocardiogram'S Components in Cats

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Abstract

The electrocardiogram (ECG or EKG) represents the graphical recording of the cardiac electrical activity (Ghiță *et al.*, 2005) and it is useful in the diagnosis in some cardiac diseases (such as rhythm disorders) (Cotor and Ghiță, 2014) or frequency disorders (Ghiță *et al.*, 2007).

The main target of this research work was to determine the values of the main components of the ECG and the cardiac frequency. The biological material was represented by 12 healthy cats of different breeds. The values obtained in this research work can be used as reference values in ECG interpretation in cats.

Keywords: cat, electrocardiogram, values

Introduction

The electrocardiogram (ECG or EKG) represents the graphical recording of the cardiac electrical activity (Ghiță *et al.*, 2005). It is being composed of several components (waves, segments and intervals), each one of these has a functional significance. In this research we intended to determine the main ECG component's durations (P wave, P-R segment, QRS complex, Q-T interval, T wave) and the cardiac frequency in cats. We consider this research work to be important, because the studied ECG's parameters can be changed in some cardiac diseases (such as rhythm disorders) (Cotor and Ghiță, 2014) or frequency disorders (Ghiță *et al.*, 2007).

Materials and methods

The biological material was represented by 12 healthy cats of different breeds. The working method consisted in registration of the ECG in right lateral recumbency (Ghiță *et al.*, 2005) using the following parameters: 10 mm for millivolt's

amplitude and 50 mm/sec for speed recording. The registration of the ECG was realized after 2-3 minutes from electrodes attachment, because we considered that this time was enough for relaxation of the animal and installation of the neurovegetative balance. The electrocardiograms were registered using Nikon Kohden electrocardiograph.

Results and discussions

In our research work we determined the durations of the most important components of the ECG, such as P wave (atrial depolarization), P-R segment (atrial electrical systole), QRS complex (ventricular depolarization), QT interval (ventricular electrical systole) and T wave (the end of the ventricular repolarisation) and the cardiac frequency calculated on the basis R-R interval (Table 1). The average values of the ECG component durations obtained by us fall within the limits of the results acquired by other researchers (Table 2).

Table 1. The values of the ECG components in cats, obtained by us (seconds)

Nr.	Breed	Age	P	P-R (P-Q)	QRS	Q-T	T	Heart rate
1	Persian	1 year	0,04	0,08	0,04	0,16	0,06	187,50
2	Siamese	2 years	0,04	0,08	0,04	0,12	0,08	187,50
3	European	3 years	0,04	0,08	0,06	0,16	0,06	166,66
4	European	1 year	0,06	0,08	0,04	0,16	0,06	214,28
5	Siamese	3 years	0,04	0,04	0,04	0,16	0,04	187,50
6	Turkish Angora	1 year	0,04	0,08	0,04	0,16	0,04	214,28
7	Persian	2 years	0,04	0,08	0,04	0,16	0,04	214,28
8	Birman	2 years	0,04	0,08	0,06	0,12	0,04	187,50
9	European	3 years	0,06	0,08	0,04	0,16	0,04	214,28
10	Persian	2 years	0,04	0,04	0,06	0,16	0,04	187,50
11	European	1 year	0,04	0,08	0,04	0,16	0,08	214,28
12	Persian	2 years	0,04	0,08	0,04	0,12	0,04	187,50
AVERAGE			0,043	0,073	0,045	0,150	0,051	196,92
Standard deviation			0,007	0,015	0,009	0,018	0,015	16,38

Table 2. The values of the ECG components in cats obtained by other authors, compared with our results (seconds)

Author	P	P-R (P-Q)	QRS	Q-T	T	Heart rate
Tilley L. et al., 2007	0,040	0,05-0,09	0,040	0,12-0,18	-	120-240
Sarangi S. et al., 2016	0,040	0,05-0,09	0,040	0,07-0,20	-	160-220
Camacho A. et al., 2010	0,040	0,05-0,09	0,040	0,12-0,18	-	120-240
Ghiță M. et al., 2007	0,042	0,078	0,041	0,158	0,058	193-204
Personal researches	0,043	0,073	0,045	0,150	0,051	179-212

Conclusions

In this research work, we demonstrated that the results obtained by us confirm the values acquired by other researchers in studies about evaluation of the ECG components duration. The values obtained in this research work can be used as reference values in ECG interpretation in cats.

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