ETHOLOGICAL STUDY REGARDING THE DIPSIC BEHAVIOUR CHANGES DURING THE GESTATION PERIOD IN DOMESTIC CATS

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Abstract

The body's water requirement, under normal metabolic conditions, is direct proportional to the metabolic processes' intensity, therefore, gestation can be correlated with the water requirement's physiological variations, which will lead to a series of changes of the dipsic behaviour in domestic cats. For this ethological study, we analysed a group of 8 healthy female cats, monitoring their dipsic behaviour in the gestation period (between day 35 and 55), for 5 consecutive days. Based on the individual values obtained, the average group values of the studied parameters were calculated and statistically compared with the mean results obtained for a group of 10 clinically healthy individuals. Thus, in the studied group of pregnant felines, there was observed the increase of the mean number of waterings/24 hours and of the average duration/watering session, the two parameters were statistically significant (p<0.05) higher than the values obtained in the case of the control group. Also, it was recorded an increase of the dipsic behaviour manifestation duration/24 hours (p<0.01), as a result of the concomitant increase of the mean number of waterings and the average duration of a watering session.

Key words: dipsic behaviour, gestation, domestic cats.

INTRODUCTION

The physiological status intrinsically influences the nutrients intake and, at the same time, the body's water requirements. Since, under basal conditions, the amount of water that the body needs is proportional with the intensity of the physiological processes, gestation can be correlated, as a demanding period, with some physiological variations of the water intake, which will be expressed through a series of dipsic behaviour changes in pregnant cats (Codreanu, 2018; Dawkins, 2003).

In order to determine the impact that gestation has on the main parameters used for quantifying dipsic behaviour in cats, a group of 8 females was formed. The subjects were clinically and ethologically evaluated on the course of the gestation period. The results were then compared to the ones obtained for a group of 10 healthy adult cats.

The dipsic behaviour of the selected patients was monitored at home for 5 consecutive days, between day 35 and 55 of gestation. The monitoring was carried out by video recording means, and the data obtained was used for performing individual and group ethograms – as the ethogram represents the most important tool in assessing and analysing an individual's behaviour (Codreanu, 2022; Stanton et al., 2015).

The intensification of the dipsic behaviour during the gestation period, in this species, was also reported by other researchers (Taylor, 1995; Wichert et al., 2009), and was translated, in our study, by the increase of the values of all the ethological parameters used for quantifying this type of behaviour.

Thus, in the case of the individuals in our study group, we recorded an increase (with statistical significance) of the mean number of watering sessions/24 h. The same findings were noted in the case of the mean duration/ watering session. All the results were statistically analysed and compared with the values of the control group.

Pregnant cats showed, therefore, an increased dipsic behaviour, in correlation with their high metabolic demands, an aspect also reported by other authors in the specialty literature (Alekseeva et al., 2020; Bowen, 2002).

MATERIALS AND METHODS

The study regarding the influence of gestation on dipsic behaviour in cats, was carried out on a group of 8 pregnant females, which were monitored, for 5 consecutive days, constituting

the study group (Table 1). The females were clinical and paraclinical (haematology, blood biochemistry, ultrasonographic exams) evaluated, their clinical status being healthy, before and during gestation. An important component of the clinical evaluation was the neurological exam, in order to exclude any type of behaviour change connected to the occurrence of Toxoplasmosis or other neurological pathologies (Cucoș et al., 2015; Turbatu et al., 2018).

Table 1. The structure of the study group - pregnant females with healthy clinical status

Individuals from the study group		
Patient no.	Breed	Age (y.o.)
1	European Shorthair	3
2	British Shorthair	4
3	British Shorthair	3
4	British Longhair	2
5	European Shorthair	1.5
6	European Shorthair	5
7	European Shorthair	2
8	Burmese	5

The dipsic behaviour was analysed by means of video recording, this being the most appropriate way of monitoring the individual with accuracy and without causing any type of stress (Codreanu et al., 2022; Nicolae et al., 2023; Nicolae & Codreanu, 2023). Through video monitoring, using the Xiaomi Home portable surveillance camera, it was possible to directly observe the dipsic behaviour (Figure 1). The Xiaomi Mi Home Security video camera can be connected to the smartphone via the mobile app and provide both real-time data and stored video recordings for later analysis in full HD resolution (Nicolae et al., 2023).

For monitoring the dipsic behaviour, the camera was placed to capture the water bowl or automatic water dispenser (Figure 1). The sensors have been set so that the camera activated and recorded (when the cat comes into proximity) a short video, which it then transmitted to the mobile app. Thus, the videos stored were analysed individually, allowing us to assess, with great precision, the duration of the dipsic behaviour, as well as the frequency of manifestation of this type of behaviour, in 24 hours.
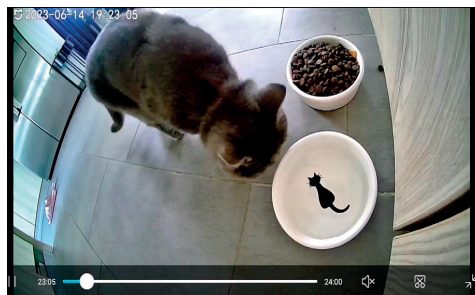

Figure 1. The direct observation of the dipsic behaviour in a patient (British Sh, F, 4 years old) from the study group – using the Xiaomi video camera

The camera has a night mode, due to the integrated invisible infrared LEDs, so that individuals could be properly monitored even during the night, the recordings being clear and conclusive (Figure 2).

Figure 2. Video recording of the dipsic behaviour, during the night, in a patient (British Sh, F, 3 years old) from the study group – using the Xiaomi video camera night mode feature

The entire process of monitoring, data collection and processing was carried out with the prior written consent of the owners, in accordance with the Romanian and European Union laws regarding the protection of personal data.

The ethograms were drawn up for each individual based on the data obtained. The individual ethogram included data on: time interval in which the dipsic behaviour occurred, watering sessions frequency/24 h, the dipsic behaviour total duration/24 h, the mean duration of a watering session, and data regarding the frequency of approaching the water source without exhibiting dipsic behaviour.

RESULTS AND DISCUSSIONS

The results for each individual were synthetised as group ethograms, which we drawn up for each day of monitoring. Those preliminary data were used for the synthetic data analysis (Table 2).

As concerning the average values obtained for our group of study, they were statistically compared (classic T-test) with the ones obtained in the case of a group of 10 non-pregnant, female adults. The results of the comparative analysis are presented in the graph from Figure 3 and also in Table 3.

Table 2. The average values of the parameters used for evaluating the dipsic behaviour/monitoring period/individual from the study group

No.	Patient (breed, age)	Parameter			
		Average number of waterings/24 hours	Average duration of the dipsic behaviour (sec./24 hours)	Average duration of a watering session (sec.)	Average number of approaches to the water source without displaying dipsic behaviour/24 hours
1	European Sh, 3 y.o.	2.8	112.09	40.31	0.6
2	British Sh, 4 y.o.	3	118.07	40.09	0.8
3	British Sh, 3 y.o.	3.2	126.74	39.92	0.8
4	British Lh, 2 y.o.	3	119.60	40.28	0.4
5	European Sh, 1.5 y.o.	3	112.83	37.61	0.8
6	European Sh, 5 y.o.	2.4	95.67	40.61	0.4
7	European Sh, 2 y.o.	3.4	127.83	37.78	1.2
8	Burmese, 5 y.o.	3.8	139.86	36.82	1.2
GROUP AVERAGE		**3.08**	**119.08**	**39.18**	**0.77**

Table 3. Comparative results regarding the mean values of the dipsic behaviour indicators, correlated with the physiological status (gestation) in the group of study

DIPSIC BEHAVIOUR INDICATOR	STUDY GROUP	
	PREGNANT	ADULTS – CONTROL GROUP
Average number of waterings/24 h	3.08*	2.57
Mean duration of dipsic behaviour (sec./24 h)	119.08**	94.05
Average duration of a watering session (sec.)	39.18*	37.06
The average number of approaches to the water source, without the manifestation of dipsic behavior /24 h	0.77	0.57

$p > 0.05$ – non-significant differences
*$p < 0.05$ – significant differences
**$p < 0.01$ - highly significant differences

In the individuals from our study group – pregnant cats (in the second part of the gestation period), we observed a statistically significant $(p<0.05)$ increase of the mean duration/ watering session and of the mean number of waterings/24 h, compared with the control group.

It has been recorded also, an important increase - highly significant $(p<0.01)$ of the mean duration of the manifestation of dipsic behaviour/24 h, being most likely the result of the simultaneous increase of the other parameters monitored.

In the same context, we observed an increase, but without statistical significance $(p>0.05)$ of the average values for the number of approaches to the water source, without exhibiting dipsic behaviour/24 h, in the study group.

The results are consistent with the ones reported in the specialty literature, in studies regarding the dipsic and nutritional behaviour changes in different physiological and pathological situations in this species (Kim & Wakshlag, 2023; Houpt, 1991; Bradshaw, 2018).

Although we observed a clear intensification of the dipsic behaviour, which, by any means, indicates an increased water consumption, we can exclude the polydipsia syndrome, as the water intake increase has physiological causes, and the clinical status of the patients does not indicate any sign of underlying pathology (Codreanu M.D., 2017; Cunningham, 2019).
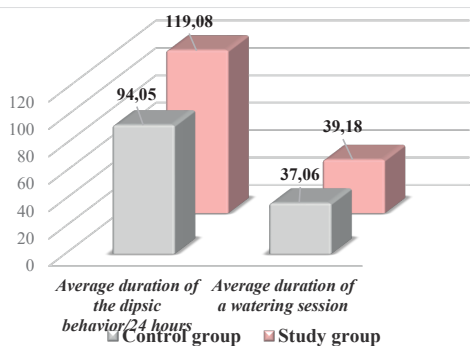
Figure 3. Comparative aspect regarding the influence of the physiological status (gestation) on some quantification parameters for the dipsic behaviour in pregnant cats

CONCLUSIONS

The physiological status (gestation) has an essential impact on the dipsic behaviour in this species.

As concerning the manner in which the physiological status (gestation) influences this behaviour in cats, the ethological indicators used for quantifying this type of behaviour recorded higher mean values (with statistical significance), compared to the healthy adults' group, especially, due to the intensification of metabolic processes and, respectively, water consumption, in the second part of the gestation period.

Pregnant cats presented longer and more often watering session, than adults from the control group, the duration of manifesting dipsic behaviour/24 hours being, therefore, higher.

The changes of the dipsic behaviour are part of the complex ethological features present during pregnancy in this species.

These findings indicate that additional to the special nutritional needs, during gestation, the water requirements are also higher, therefore, ensuring that the female has constant access to a clean, room temperature water supply is mandatory for ensuring the welfare and health of both the mother and future offsprings.

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