INFLUENCE OF ENVIRONMENTAL CONDITIONS ON TURTLES HEALTH KEPT IN CAPTIVITY

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Abstract

In recent years, turtles have become more and more common as pets, while owners are not properly informed about their care. Thus, the pathology of this species in 90% of cases are caused by neglecting microclimate and nutrition conditions. The requirements of turtles are also according to their type (terrestrial tortoises or aquatic turtles). They need an environment as close as possible to their natural environment, a habitat with temperature, humidity, UV light and food which offer a maximum comfort. This paper aims to underline the importance of the feeding and microclimate conditions on turtle's welfare and health. The clinical study was performed on turtles (different species: Testudo hermanni hermanni, Emys orbicularis and Trachemys scripta) that were referred to the Faculty of Veterinary Medicine of Iasi between 2015- 2017. The main disorders noticed were consisting in vitamin and mineral imbalances, oral and ocular lesions, impaired development of the shell. After a careful physical examination which was correlated with turtle`s history given by the owner who described how the turtles are feed and where they are kept, an appropriate therapy has been recommended and adapted according to the symptoms severity (adequate diet, supplements with vitamins and minerals, improvement of microclimate conditions). When owners are respecting the doctor`s indication, the animal`s conditions is visibly improving after 2-3 months. Therefore, the main inconvenient of this long term treatment is the owner`s attitude, who is expecting good results in a short time and in some cases he renounces to follow the recommendations.

Keywords*: microclimate, turtles, impaired shell, hypovitaminosis.*

Introduction

In recent years, turtles have fallen into the pet category, being preferred by both adults and children due to their conformation and appearance in comparison to other pets.

The most common species of the *Testudinidae* Family, especially turtles of the genus *Testudo* (*T. Greaca* – african turtle, *T. hermanni hermanni* - Hermann West turtles, *T. hermanni boettgeri* - Hermann East turtle), are growing in the south and east of our country. One of the most popular species in captivity is *Testudo Horsfield* - the russian steppe turtle or Horsfield terrestrial turtle.

Besides the mentioned species of the genus *Testudo*, which are terrestrial, there are frequent encounters with species like *Emys orbicularis* – european water turtle and *Trachemys scripta* - the turtle with red temples, which are semiacvatical turtles.

The growth and maintenance in captivity of these species from different regions is not correlated with the provision of appropriate microclimate conditions, especially with the proper arrangement and organization of special areas, terrariums, in order to provide the optimal parameters for the appropriate temperature and nutrition.

Most owners due to the lack of knowledge about the biology of these species or the partial knowledge of their microclimate conditions make serious mistakes of livelihood, which in captivity can lead to a specific pathology expressed by serious metabolic deficiencies.

Turtles, along with all other reptiles, are animals with variable body temperature (poikilotherme). For each species of turtle there are parameters of comfort and hibernation, very precise, which must be taken into account. Their optimal temperature varies between 24°C and 28°C, and the critical temperature is above 38°C. Changing the living conditions (mild reduction or excessive temperature drop) leads to cessation of activity and hibernation. In captivity, hibernation is a delicate stage that requires animal specific conditions.

Thus, aquatic turtles need a water basin adapted to hibernation at a temperature of 2°C to 8°C, and the dry ones require specially arranged places (in gardens, shelters) with temperatures of minimum 15-16°C. In case of high variations of temperatures, the turtles awake from hibernation prematurely and risk exhausting their reserves, and most often death occurs.

As for all creatures, turtles need a balanced nutrition without which the body could not develop properly.

In addition to the specific biological particularities, for turtle alimentation we have to take into account the needs of the body, season, age, environmental changes and their metabolism. Alimentation is differentiated according to the type of animal, whether it is a carnivorous or omnivorous turtle. The omnivorous turtles, due to the morfofunctional particularities of the digestive tract, feed more often than aquatic ones, and if it is not possible, their activity is greatly reduced.

Maintenance of turtles is another important parameter to be considered in captivity. Animals need to be given the amount of oxygen required for breathing, avoiding air currents, a certain brightness provided by natural light and ultraviolet rays required to synthesise vitamin D.

It is mandatory to provide a source of even artificial ultraviolet. The space provided must ensure a minimum of vital comfort for the animal to move. It is also mandatory to maintain a proper hygiene of the space and, implicitly, of the animal.

When all these minimum survival conditions are not known and fulfilled by the owners, the turtles begin to develop a pathology that may sometimes be incompatible with life.

This paper highlighted the pathology most commonly encountered in turtles raised in captivity, the nutritional and microclimate deficiencies and suggested remedies.

Materials and methods

The research was carried out at the Faculty of Veterinary Medicine of Iasi during 3 years from 2015 until 2018 on a number of 17 turtles submitted for consultation (*Testudo hermanni hermanni, Emys orbicularis* and *Trachemys scripta*).

After a complete anamnesis and identification of the main deficiencies in their microclimate, the animals were clinically examined and the necessary treatment according to the pathology they expressed, was applied. The turtles were grown under deficient captivity, fed inappropriately or in excess.

Results and discussions

The turtle owner has presented at the Faculty of Veterinary Medicine Clinic, a female Hermann land turle, about 5-6 years old, because she was no longer eating and was apathetic.

From anamnesis it emerged that in the past the animal suffered multiple falls from high areas. She did not have a terrarium, was left free in the house, was not exposed to UV light, not vitamin-mineral supplement was given, the food was processed, commercial and vegetable and fruit were rarely given. After a careful examination of the integrity of the shell, fissures and micro-fissures were noticed on the shield, deformations, descumation and matity of the shell (Fig. 1, Fig. 2), eyes half closed and drowsiness.

Fig. 1 Deformation of the shell

Fig. 2 Deformation of the beak

The recommended treatment consisted of day-to-day shelling with AD3E vitamin, oral administration of a polyvitamin complex for 14 days, food of good quality, exposure to UV rays daily for 5-15 minutes if accommodated indoors and longer if its moved outdoors, with the observation of ensuring shade and arranging a terrarium.

After two weeks the owner returned for consultation, has respected the treatment and instructions offered. The turtle has showed the return of the shell gloss, welding and cracks healing (Fig.3). The animal has resumed its appetite, with a good prognosis.

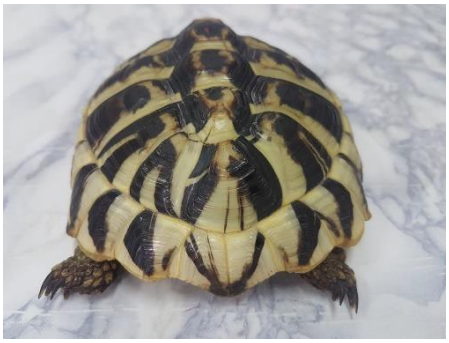

Fig. 3 The shell aspect after 2 weeks of treatment

The second case of our study was represented by a female red eared turtle of Florida, about 2 years old. The patient was brought for consulting because she did not eat for a week. From anamnesis it emerged that the turtle was kept in an outdoor pool, arranged in the yard, was not observed every day, only when feeding, once a week, with pellets, industrial food.

After the clinical examination of the turtle, was observed an unsatisfactory condition of maintenance, severe deformations of the shell and limbs (Fig. 4), deviation of the axle between the shell and the plastron in the side, defective welding and shielding of the shell, soft structure of the shell and plastron, difficulty in movement, edema of the eyelids, severe dehydration, slimming, depigmentation and scarring in the head and peribucal, beak deformations (Fig. 5).

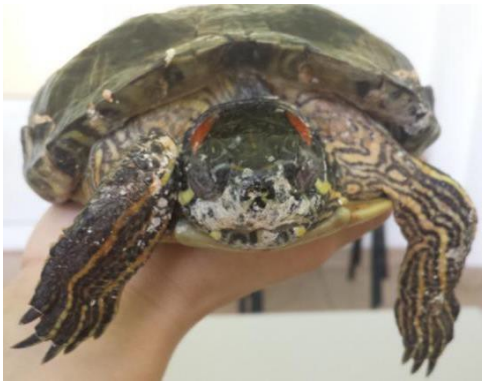

Fig. 4 Deformation of the shell and limbs

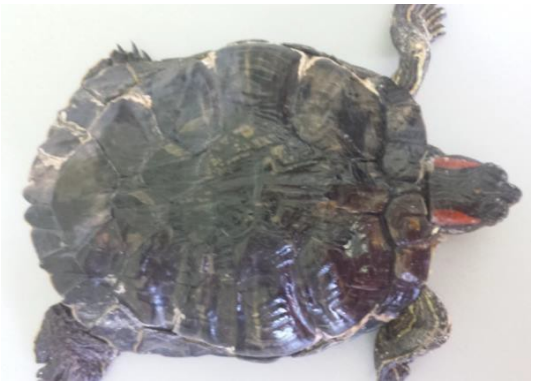

Fig. 5 Deformation of the beak, edema of the eyelids, desquamation and depigmentation

The recommendations given to the turtle owner consisted in: the administration of AD3E vitamin in the water, daily anointing of the shell with AD3E vitamin at least 3 weeks, block of calcium in the water during 4 weeks, food of good quality and vitamins and minerals supplementation, exposure to artificial UV rays for 5-10 minutes daily or natural UV rays as long as possible, as much as providing a shady place, cleaning the pool water and providing a dry portion within the basin. Unfortunately, the general condition of the animal could not be improved and died.

The third presented patient was a 4-year male European aquatic and dry turtle. The owner noticed that the patient no longer opened his eyes, no longer nourished, and was no longer active. He did not know exactly when the signs started.

After the anamnesis, the owner declared that during the summer, the turtle is kept in specially designed pool in the yard, while in autumn-winter season, is kept free through the house. Clinical examination revealed unsatisfactory maintenance, dehydration, somnolence, desquamation and a light deformation of the carapace shields, excessive growth and deformation of the claws, epithelial changes at the head level, with thickened skin, matified and with structural changes (Fig. 6), with no response to painful stimuli, concluding that the animal was in hibernation.

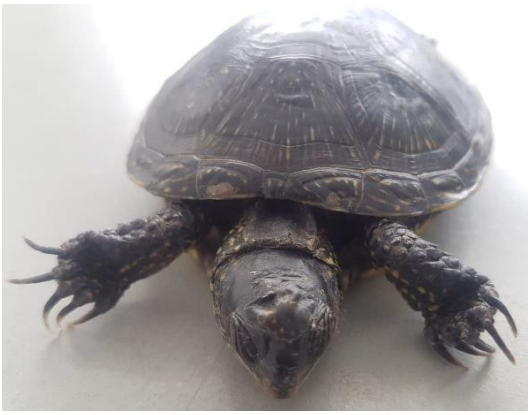

Fig. 6 European turtle, clinical aspect with the deformation of the limbs and claws

Treatment and recommendations consisted of warm bath for 10-15 minutes, 3-4 time per day, setting up an indoor aquarium and a thermostat heater and gradually increasing the level of water during 3 days, starting with 25ºC, on the third day reaching 27ºC and maintaining this temperature all the animal life. Roots cutting and shorthening them regularly, anointing of the shell with ADE3 vitamin, good food quality. The owner followed the recommendations and returned with the patient within about 2 months.

Conclusions

Analyzing the results of this study carried out at the Faculty of Veterinary Medicine of Iasi, on the turtles presented during the consultation, the following can be concluded:

1. A very high percentage of the pathologies in turtles, is due to the influence of microclimate and nutrition.
2. Increased attention is needed to ensure the microclimate and nutrition factors according to the maintenance requirements of the chosen turtles, either dry or aquatic.

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