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# VITAL SIGNS OF DOGS WITH VARIOUS GASTROINSTESTINAL PARASITIC INFECTIONS IN UMUAHIA, ABIA STATE

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***ABSTRACTS***

***Feacal samples of exotic dog breed were collected and placed in clean and well labelled containers before analysis in the laboratory using saturated salt floatation technique. The Vital signs such as the heart rate (bpm), pulse rate (bpm), temperature ($^oC$) and respiratory rate (cycles/min) were determined using auscultation, thumb palpation, thermometer, and "Standback" observation respectively for each of the signs.The temperature of exotic breeds was 38.40±0.12$^a$ and 38. 67±0.29$^a$. in mongrels. The temperature in Adults was 38.96 ±0.12 and 38.87±0.16 in puppies. The heart rate of Exotic breeds was 110.00±8.15 and 106. 67±7.65 in mongrels. Heart rate in adults was 100.90±3.25 and 106.21±2. 58 in puppies. The pulse rate in exotic breeds was recorded at 101.00±5.67 and 98. 33 ± 6.50 in mongrels. The pulse rate in Adults was 91. 59±2.25 and 98.90±2 in puppies. The respiratory rate in exotic breeds was 38.00±9.12 and 28. 33± 5.950 in mongrels. The respiratory rate in adults was 90±3.72 and 34.14± 3.26 in puppies. There was no significant ($p<0.05$) effect on the Vital signs of dogs with natural infection of gastrointestinal parasites***

**Keywords**: Clinical, dogs, gastrointestinal parasites, parameter, Vital signs

## INTRODUCTION

The gastrointestinal parasite is a global health concern as transmitters of several key diseases in vertebrates (Stefer, 2014). The degree of nematode infestation varies according to the host immune response to the worms (Alade and Bwala, 2015). Over the years there have been several research findings with strong reasons on the level of severity of gastrointestinal parasite infestation among different age, sex and breed (Bilbo and Nelson, 2001). Males are generally known to be more susceptible to GIT nematodes than females due to factors such as male hormone which influences their roaming tendencies and also reduces immunity (Kutdang *et al.*, 2010, Asif *et al.*, 2008). Several researches have also established high incidence rate of GIT infestation in younger than older dogs due to immunity acquired from previous exposure in older dogs (Bilboand Nelson, 200, Pam *et al.*, 2015). Gastrointestinal parasite disease in human commonly presents signs such as diarrhoea, abdominal discomfort, nausea, vomition, pyrexia and emaciation (Stefer, 2014). Emaciation may result from host competition with parasites and diarrhoea (Reingold and Gordon, 2012). These parasites also reduce the level of haemoglobin concentration in infested animals (Aladeand Bwala, 2015). A proportion of dogs infected with GIT parasites do not show obvious clinical signs

of disease however they usually present with vague complaints such as in appetence, poor performance and emaciation. There is however dearth of information on the changes in clinical parameters in GIT infestation in animals. Clinical parameters (Vital signs) are tools used in medicine to assess the health status of animals and also aids in diagnosis (Hassan and Hassan, 2003). The parameters include the heart rate, pulse rate, temperature and respiratory rate. Knowledge of these parameters in GIT infestation in dogs would aid to ascertain the degree of severity and diagnosis. It has therefore become necessary to determine the changes in clinical parameters in GIT infestation in dogs.

## MATERIALS AND METHODS

### Study area

This study was carried out in Umuahia the capital city of Abia State in the Southeast Nigeria. Umuahia is a town is located along the rail road that lies between Port Harcourt to Umuahia south and Enugu city on the North. On the map it lies at latitude $5^0$ 32' North and longitude $7^0$ 29' East (Vanguard media, 2013; GPS coordinates Net, 2014).

### Sample Collection

Faecal samples were randomly collected from dogs of all age group, sex and breed presented at veterinary teaching hospital, Michael Okpara University of Agriculture, Umudike (VTH MOUAU) and those in homes in Umuahia. Faecal samples collected were placed in sterile well labelled containers for proper identification. Clinical parameters such as the heart rate, pulse rate, temperature and respiratory rate were determined from the sampled dogs. The results of the readings were recorded against the name of each of the sampled dogs. The faecal samples were analysed using saturated salt faecal flotation to determine positive cases with GIT infestations. Both the positive and negative cases were compared with the clinical parameters obtained from each of the dogs and the results recorded.

### Faecal sample collection

Faecal samples were collected from the individual dogs via rectum with gloved fingers (Edosomwan and Chinweuba, 2012). The samples were well preserved in a well labelled sterile faecal sample bottles and transported to laboratory for analysis. Faecal analysis was performed using simple flotation technique (Hendrix and Sirios, 2007).

### Determination of Clinical parameters

The selected animals were properly restrained using leather muzzles before placing on the examination table. The heart rate was measured by placing a stethoscope on the left thorax; at the level of the bent elbow at about 5th to $6^{th}$ intercostal muscle on the ribs of the dog and the result obtained was recorded in beats per minute (bpm). The pulse rate was measured by placing a finger on the femoral artery up at the medial aspect of the thigh, up in the inguinal region. The pulsation was determined for one minute and the result recorded in beats per minute (bpm). The rectal temperature was determined by inserting a sterile digital thermometer into the rectum in a slanting position to make contact with the rectal wall. The thermometer was held in position until it beeps. The thermometer was read and the result recorded in degree Celcius $^oC$. The respiratory rate was determined using the" stand back" procedure as described by (Ettinger and Feldman, 2005). The result obtained was recorded in cycles per minute.

### Statistical analysis

The data collected was analysed using students T test. The result was presented as mean ± standard deviation (SD) and the level of significance accepted at $P < 0.05$. The changes in clinical parameters in different age, sex and breed was compared using Duncan multiple range test

**RESULTS**

In table 1 below, the temperature of exotic breeds was recorded at 38.40±0.12[a] and that of local [mongrels] at 38. 67±0.29[a.] There was no significant (p<0.05) difference in temperature of exotic breeds compared to the local (mongrels). The temperature of males was 38.70±0.1 and 39.17±0.13 in females. There was no significant (p<0.05) difference recorded between the temperature in males compared to the females. The temperature in Adults was recorded at 38.96 88. ±0.12 and 38.87±0.16 in puppies. There was no significant (p<0.05) difference between the temperature in adults compared to puppies.

**Table 1. Mean ± SD of Temperature ($^{o}$C) of dogs with gastrointestinal parasites presented at Veterinary Teaching Hospital and its environs in Umuahia, Abia State**

| **Breed Temperature ($^{o}$C)** | **Normal Temperature 37.9 to 39.9$^{o}$C** | |
|---|---|---|
| Exotic | Local (mongrel) | Level of significance |
| 38.40±0.12[a] | 38. 67±0.29[a] | <0.05 |
| Sex Temperature ($^{o}$C) | | |
| Male | Female | Level of significance |
| 38.70±0.16[a] | 39.17±0.13[a] | <0.05 |
| Age Temperature($^{o}$C) | | |
| Adults | Puppies | Level of significance |
| 38.96±0.12[a] | 38.87±0.16[a] | <0.05 |

*Values with superscripts a, in the same row are not statistically significant and the level of significance is accepted at p<0.05*

In Table 2 below: The heart rate of Exotic breeds was recorded at 110.00±8.15[a] while it was 106.67±7.65[a] in mongrels. There was no significant (p<0.05) difference in heart rate of exotics compared to the mongrels. The heart rate in males was recorded at 103.41±3.39[a] and that in females at 104.81±2.78[a]. There was no significant (p<0.05) difference in heart rate in males compared to females. Heart rate in adults was recorded at 100.90±3.25[a] while that in puppy was at 106.21±2. 58[a]. There was no significant (p<0.05) difference in the heart rate in Adults compared to puppies.

**Table 2: Mean ± SD of Heart rate (beats per minute) of dogs with gastrointestinal parasites presented at Veterinary Teaching Hospital and its environs in Umuahia, Abia State**

| **Breed Heart rate (bpm)** | **Normal Heart rate:70-120 (bpm)** | |
|---|---|---|
| Exotic | Local (mongrel) | Level of significance |
| 110.00±8.15[a] | 106. 67±7. 65[a] | <0.05 |
| Sex Heart rate (bpm) | | |
| Male | Female | Level of significance |
| 103.41±3.39[a] | 104.81±2.78[a] | <0.05 |
| Age Heart rate (bpm) | | |
| Adults | Puppies | Level of significance |
| 100.90±3.25[a] | 106.21±2. 58[a] | <0.05 |

*Values with superscripts a, in the same row are not statistically significant and the level of significance is accepted at p<0.05.*

In Table 3 below: The pulse rate of exotic breeds was recorded at 101.00±5.67[a] and 98. 33 ± 6.50[a] in mongrels. There was no significant (p<0.05) difference in the pulse rate of exotic breeds compared to that in mongrels. The pulse rate in males was recorded at 93. 85 ± 2. 60[a] and 96.69±2.78[a] in females. No significant (p<0.05) difference was observed in the pulse rate of males compared to females. The pulse rate in Adults was recorded at 91. 59±2.25[a] and 98.90±2. 37[a] in puppies. No significant (p<0.05) difference was recorded in the pulse rate of adults compared to puppies.

**Table 3. Mean ± SD of Pulse rate (beats per minute) of dogs with gastrointestinal parasites presented at Veterinary Teaching Hospital and its environs in Umuahia, Abia State**

| **Breed Pulse rate (bpm)** | **Normal Pulse rate:70-120 (bpm)** | |
|---|---|---|
| Exotic | Local (mongrel) | Level of significance |
| 101.00±5.67[a] | 98. 33± 6.50[a] | <0.05 |
| Sex Pulse rate (bpm) | | |
| Male | Female | Level of significance |
| 93. 85±2. 60[a] | 96. 69±2.78[a] | <0.05 |
| Age Pulse rate (bpm) | | |
| Adults | Puppies | Level of significance |
| 91. 59±2.25[a] | 98.90±2. 37[a] | <0.05 |

*Values with superscripts a, in the same row are not statistically significant and the level of significance is accepted at p<0.05.*

In Table 4 below: The respiratory rate in exotic breeds was recorded at 38.00±9.12[a] and 28. 33± 5.950[a] in mongrels. There was no significant (p<0.05) difference between the respiratory rate in exotic breeds compared to mongrels. The respiratory rate in males was recorded at 28.77±3. 94[a] and 30. 69±3.90[a] in females. There was no significant (p<0.05) difference in the respiratory rate in males compared to females. The respiratory rate in adults was recorded at 24. 90±3.72[a] and 34.14± 3.26[a] in puppies. There was no significant (p<0.05) difference in the respiratory rate in adults compared to puppies.

**Table 4; Mean ± SD of respiratory rate (cycles per minute) of dogs with gastrointestinal parasites presented at Veterinary Teaching Hospital and its environs in Umuahia, Abia State**

| | Normal respiratory rate:18–34 cycles per minute(cpm) | |
|---|---|---|
| **Breed respiratory rate (cpm)** | | |
| Exotic | Local (mongrel) | Level of significance |
| 38.00±9.12[a] | 28. 33± 5.950[a] | <0.05 |
| Sex respiratory rate (cpm) | | |
| Male | Female | Level of significance |
| 28. 77±3. 94[a] | 30. 69±3.90[a] | <0.05 |
| Age respiratory rate (cpm) | | |
| Adults | Puppies | Level of significance |
| 24. 90±3.72[a] | 34.14± 3.26[a] | <0.05 |

*Values with superscripts a, in the same row are not statistically significant and the level of significance is accepted at p<0.05.*

## DISCUSSION

Not much importance has been given to the vital signs or clinical parameters of dogs harbouring gastrointestinal parasites as confirmed from dearth of information on the subject in literature, despite the importance of these parameters in medicine in revealing the homeostasis of the body.

Generally, no significant change was observed in all the clinical parameters assessed which include: heart rate, pulse rate, temperature and respiratory rate. The readings obtained in all the parameters were within the normal ranges as shown on Tables 1 to 4. These finding show that gastrointestinal parasitism is not a systemic disease despite the fact that some of the parasites such as the *Ancylostoma caninum* and other nematodes could undergo visceral larval migration into various vital tissues such as the heart, eyes, lungs and other vital organs causing damage to these organs (Urquhart *et al.,* 1996). However, damage to any of the above mentioned organs by the migrating gastrointestinal nematodes, alters the clinical or vital parameter and in such case, the condition is referred to as post gastrointestinal parasitic systemic infection (Jason *et al*., 2018).

The Age, Breed and Sex differences induced no apparent effect on all the clinical parameters in the assessed dogs. On the contrary, a similar study revealed a significant influence of the body size on both the heart rate and pulse rate (Borde, 2013, Becker, 2014). The Respiratory rate, which reveals the state of the respiratory system, is often high in puppies when compared to adults and usually the rate decreases with maturity (Reece, 2014). The study observed no apparent influence of gastrointestinal parasites on Age related effect on the respiratory rate of the dogs. This may be due to the activities of the migrating gastrointestinal nematodes which cause a release of inflammatory cells in the invaded tissue causing damage irrespective of the age of the animal affected. The age factor may become important in determining the severity of the damage which is less in adults due to acquired immunity from previous exposure and severe in naïve puppies (Price and Harwood, 2007).

## CONCLUSION

Gastrointestinal parasitism has no effect on the Heart rate, Pulse rate, Temperature and Respiratory rates of dogs irrespective of the Age, Breed and Sex differences.

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