CLINICAL, HEMATOLOGICAL WITH SOME BIOCHEMICAL STUDY OF ACUTE LAMINITIS IN DROUGHT HORSES IN BASRAH .

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ABSTRACT

Clinical sings ,hematology and some biochemical changes have been investigated in local breed drought horse affected with acute laminitis in Basrah-Iraq .The study were conducted on 55 local breed drought horse 2-10 years old and from both sexes, from these ,Forty local breed drought horses show sings of acute laminitis and 15 clinically healthy local breed drought horses served as control . Results showed that diseased animals exhibited different clinical sings include loss of appetite, pain on palpation around the coronet, abnormal standing position with shuffling gait during standing , increase pulse in the palmar digital artery, sweating and anxiety were more prominent, more over body temperature, respiratory and heart rate were also increased .

The results indicated no significant increase in RBC count and Hb while the results indicated significant increase in PCV,ESR and fibrinogen in diseased horses affected with acute laminitis. The results also indicated a significant increase in WBC as a result of significant increase neutrophils . Biochemical changes revealed significant increase in AST, ALT,ALP and total bilirubin, however significant increase in cholesterol were also encountered in affected horses with acute laminitis .

INTRODUCTION

Equine laminitis is acute degeneration of the sensitive laminae of the hoof caused by different factors, trauma, increased weight bearing on one limb, excessive work on hard surface, intoxication and overeating of grains, have been the most prominent (1) .The basic lesion of laminitis is the separation of the sensitive laminae of the third phalanx from the inter digitating laminae lining the internal surface of the hoof, so

that the third phalanx drops through the hoof and comes to rest on the sole, the exact mechanism is unknown but , it is speculated that a pain - hypertension-vasoconstriction cycle develops in horses with acute laminitis(2).

The disease occurs in three distinct phases, the developmental stage in which lesions are detectable in the sensitive laminae but during which no clinical signs will appear ,the acute phase from the development of the first clinical signs then rotation or ventral displacement of the third phalanx will take place and finally the chronic stage evidenced by permanent rotation of the third phalanx with or without ventral displacement and characterized by persistent pain (3).

Equine affected with acute laminitis show sings pain ,increased digital pulsation , hot feet and lameness, Interpretation of equine laminitis in Basrah – Iraq very scares ,therefore the study were done to registered, clinical sings ,hematological and some biochemical change in local breed drought horses affected clinically with acute laminitis in Basrah,Basrah- Iraq.

MATERIALS AND METHODS

The study was carried out in Basrah province on (55) drought horses, 2-10 years old, of both sexes .Forty diseased horses show sings of acute laminitis and 15 clinically normal drought horses served as control group . Careful clinical examination had been carried out in all animals and a complete history was obtained upon presentation in the clinic and emphasis was placed on clinical signs observed, course and duration of the presenting complaint, upon completion of the general examination . 15 clinical healthy drought horses of different ages were served as control.

Ten milliliter of blood were drained from each animal by jugular vein-puncture**,** and from these (2.5) milliliter of blood mixed with EDTA used to determine total erythrocyte count (TRBCs), hemoglobin concentration (Hb), packed cell volume (PCV) Total leucocytes count and Differential leucocytes count were done using gimsa stained blood smears (4). Erythrocytes sedimentation rate (ESR) by wintrobe method (5), Another (2.5) milliliter of blood mixed with Trisodium citrate (used plasma) were used to determine fibrinogen using commercial kits (*Fibrinigen Kits,Human,Co/ Germany).*

Blood serum samples were tested spectrophotometrically for aspartate amino transferase (AST), alanine amino transferase (ALT), total bilirubin, Alkaline

phosphates (ALP) and cholesterol using available kids (Spectrum,Co/Egypt)**.**Statistical analysis were done using one way analysis of variance and t-test (6).

RESULT AND DISCUSSION

In current study diseased horses showed different clinical sings of acute laminitis , loss of appetite, pain on palpation around the coronet, abnormal standing position with shuffling gait during standing , increase pulse in the palmar digital artery, sweating and anxiety were more prominent,(Table ,1) more over body temperature, respiratory and heart rate , were also increased (Table,2) those signs were in agreement with others(1).It has been mentioned that body temperature, respiratory and heart rate were increased in acute laminitis affected horses due to excessive carbohydrate ingestion ,as lactic acid production were followed by acidemia and finally hypoxia ,once acidemia take place the liberation of endogenous progeny and endotoxin due to cellular lyses stimulating thermoregulatory centers of the hypo-thalamus resulting in elevation of body temperature(7 , 8).

Mild dehydration which were affected diseased horses with acute laminitis might be the result on elevation PCV values ,(Table,3)these result were also mentioned by (9).Results were also indicated significant increase in ESR and fibrinogen in diseased horses affected with acute laminitis ,(Table,3) Increase in ESR values were in agreement with (10) whose refer to the correlation between the sedimentation of RBCs and the severity of laminitis , and increase settling of RBCs will tack place when fibrinogen are more intense, moreover fibrinogen were associated with inflammatory conditions and values were increased prominently .In the present study show significant increase in total leukocytes count and nutrophelia have been noticed (Table,4). Leukocytosis which accompanied by increase in the netrophelis were in agreement with that reported by (11, 12), The increase in WBC is due to stimulation of immune system and stem cells in the bone marrow resulting from endotoxemia (13).).Moreover (1) mention that in acute laminitis a neutrophilia and a regenerative left shift are common and both the neutrophilia and the left shift will be increased on the first day and will last for up to three days or more ,and when in uncomplicated cases the count begins to return to normal.

Results of biochemical changes indicated significant increase in AST, ALT,ALP, total bilirubin and cholesterol ,(Table,5)same results were mentioned by (9 , 14 , 15), (15) who reported an increased enzymatic activity in the horses with acute laminitis, strongly suggesting the muscular and hepatic disorders which might be in response to the endotoxaemia, moreover(16))added that hyperbilirubinemia which might be seen in acute laminitis resulting from indirect hepatocellular damage through affected endotoxine , (15)also added that high levels of bilirubin in acute laminitis affected mules may indicate the allergic and inflammatory reaction going on there. The mean values of serum cholesterol level of diseased horses were significantly higher which might be attributed to stress in animals affected with acute laminitis as mentioned by (9).

Table (1): Clinical sings of diseased horse with acute laminitis

Clinical sing	No. of affected Horses (40)	%
Loss of appetite	30	75
pain on palpation around the coronet	28	70
Abnormal standing position with shuffling gait	28	70
increase pulse in the palmar digital artery	25	62.5
Sweating	20	50
Anxiety	19	47.5

Table(2) Body temperature, Respiratory and Heart rate, of diseased horses affected with acute laminitis .

Parameters	Control(15)	Diseased (40)
Body temperature C°	37.8 ± 0.576	39. ± 0.463 **
Respiratory rate / mint	13.47 ± 1.572	42.38 ± 4.463 **
Heart rate /mint	32.42± 4.422	73.58± 4.366 **

** P<(0.05) Values are mean ± standard error of mean.

Table (3) Blood parameters of diseased horses affected with acute laminitis .

Parameters	Control Mean ±S.D(15)	Diseased Mean ±S.D(40)
RBC $\times 10^6$ µl	10.2 ±1.115	10.8 ±0.733
HB gm/100 ml	13.22 ± 1.544	13.92 ± 0.675
PCV %	33.7 ± 2.44	37 ± 2.721**
Fibrinogen mg/100ml	328.773± 41.645	463.668 ± 38.362**
ESR ml/20 mints	22.63 ±3.553	83.76 ± 5.321 **

** P<(0.05) Values are mean ± standard error of mean.

Table(4) Total and absolute differential leukocytes count of diseased horses affected with acute laminitis

Parameters	Control Mean ±S.D(15)	Diseased Mean ±S.D(40)
TLC X10 ^{3}	9.567 ± 1.958	15.365 ± 1.946 **
Nutrophiles µl	4262 ± 531.226	9546 ± 826.552 **
Lymphocytes µl	4412 ± 374.513	4978.654 ± 268.382
Monocytes µl	513 ± 197	537 ± 225
Eosinophiles µl	388 ± 32	367 ± 44
Basophiles µl	73 ± 61	70 ± 58

** P<(0.05) Values are mean ± standard error of mean

Table (5) biochemical changes of horses affected with acute laminitis .

Parameters	**Control group(15)**	**Infected group(40)**
AST U/L	205.3 ± 16.745	338.658 ± 36.657 **
ALT U/L	19.53± 4.76	35.33 ± 7.546 **
ALP U/L	186.55± 27.657	290.73 ± 22.368 **
Total bilirubin mg / 100 ml	1.90 ± 0.63	2.24 ± 0.67 **
Cholesterol gm/100ml	98.6 ± 7.2	204.4 ± 11.4 **

** P<(0.05) Values are mean ± standard error of mean

دراسة سريرية ،دمية مع بعض التغيرات الكيموحيوية المصاحبة لإصابة خيول السحب بالتهاب الصفائح الحساسة في ألبصره.

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الخلاصة

تم في هذه الدراسة ملاحظة وتسجل العلامات السريرية والتغيرات الدموية والكيموحيوية لخيول السحب المصابة بالتهاب الصفائح الحساسة في البصرة ،البصرة-العراق. حيث تم فحص 55 حيوانا من خيول السحب المحلية تراوحت أعمارها بين 2-10 سنوات ومن كلا الجنسين،أظهرت 40 حيوانا من خيول السحب المحلية أظهرت علامات سريريه لالتهاب الصفائح الحساسة وخمسه عشرة حيوانا من الخيول المحلية السوية سريريا عدت كمجموعة سيطرة.أظهرت نتائج الدراسة أن خيول السحب المريضة أظهرت علامات سريريه تمثلت بفقدان الشهية،مع الم الحافر والوقوف بشكل غير منتظم والتحسس بزيادة النبض في الشريان الإصبعي الراحي مع تعرق وقلق الحيوان المصاب فضلا عن ارتفاع درجة حرارة الجسم مع زيادة ترداد التنفس وضربات القلب ،كما ارتفعت معدلات حجم خلايا الدم المرصوصة،سرعة تثفل كريات الدم الحمر ومعدلات منشيء الليفين في الخيول المصابة بالمقارنة مع مجموعة خيول السيطرة وسجلت زيادة معنوية في معدلات العدد الكلي لخلايا الدم البيض بسبب الارتفاع المعنوي لمعدلات العدلات في حين اظهرت نتائج الفحوصات الكيموحيوية ارتفاع معنوي في معدلات خميرة الاسبارتيت والالنين ناقلة الامين والفوسفتاز القاعدية مع ارتفاع الصفراوين الكلي ومعدلات الكوليستيرول في خيول السحب المصابة بالتهاب الصفائح الحساسة بالمقارنة مع مجموعة خيول السيطرة.

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