



Diabetes in dogs

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SUPERVISION SHEET

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Abstract

The aim of this study is to investigate the diabetes in obese and emaciated dogs. Overweight dogs are considered clinically obese when body weight exceeds optimum weight for body size by at least 15%, while dogs are considered emaciated when they lose a substantial amount of both body fat and muscle tissue, resulting in a body weight that is at least 20–25% less than an ideal weight. Therefore, the present study was designed to classify 125 dogs according to their body condition scores (BCS); age and health state into four main groups (apparently healthy, diseased, young and old); respectively and investigate some of their biochemical and hematological blood constituents. The first group of apparently healthy dogs, old obese dogs showed significant ($p<0.05$) increase in alkaline phosphatase enzyme (ALP). Random blood sugar (RBS) level showed significant ($p<0.05$) decrease in young emaciated dogs. Also, there was significant ($p<0.05$) increase in the values of erythrocytes count (RBCs), hemoglobin concentration (Hb) and Packed cell volume (PCV) of old obese dogs. While in the second group of diseased dogs, old emaciated dogs showed a significant ($p<0.05$) increase in ALP. RBS showed significant ($p<0.05$) increase in young obese dogs. Also, young obese dogs showed a significant ($p<0.05$) decrease in Urea. It was concluded that age and BCS have significant effect on different blood parameters and health state of the dog. Also, there are no diabetic cases in our study.

Key words: Diabetes, Obesity, Emaciation, Age, Health state, Blood parameters.

Dedication

I dedicate this thesis to my beloved father who could not be with us today. May his soul rest in peace and May Allah forgive grant him Jannet Alferdaws.

And to my mother, who showed me nothing but unconditional love. I will be forever grateful to you.

To my third brother Ahmed, who left us years ago, but still lives in our hearts.

To my family, Aunt Mona, Uncle Adel, Samar, Mohammed, Dalia, Ahmed, Menna and Karim, you were an essential motivation for me to finish this thesis.

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List of abbreviations:

A	Albumin
ALT	Alanine aminotransferase
ALP	Alkaline phosphatase
ASPCA	American Society for the Prevention of Cruelty to Animals
AST	Aspartate aminotransferase
BUN	Blood Urea Nitrogen
BCS	Body Condition Score
BF	Body Fat
BMC	Bone Mineral Content
C	Celsius
cm	Centimeter
CKD	Chronic Kidney Disease
CBC	Complete Blood Count
CT	Computed Tomography
CHF	Congenital Heart Failure
cmm	Cubic centimeter
dl	Deciliter
D2O	Deuterium Oxide
DM	Diabetes Mellitus
DCM	Dilated Cardiomyopathy
DEXA	Dual Energy X-ray
fl	Femtoliter
GGT	Gamma Glutamyl Transferase
G	Globulin
g	Gram
GH	Growth Hormone
HC	Hemoglobin Content
Kg	Kilogram
KV	Kilo Volt
LBM	Lean Body Mass
L	Liter
MRI	Magnetic Resonance Image
MS	Metabolic Syndrome
MCH	Mean Corpuscular Hemoglobin
MCHC	Mean Corpuscular Hemoglobin Concentration
MCV	Mean Corpuscular Volume
m	Meter
μl	Microliter
mg	Milligram
mmol	Millimole

MTACCSs	Modified Tufts Animal Care and Condition Scale System
MCS	Muscle Condition Score
N	Number of dogs
PCV	Packed cell volume
Pg	Picogram
PLT	Platelet Count
POC	Point-of-Care
PD	Polydipsia
PCR	Polymerase Chain Reaction
PU	Polyurea
PH	Potential Hydrogen
QMR	Quantitative Magnetic Resonance
RBS	Random Blood Sugar
RBCs	Red Blood Cells
Rpm	Round per minute
S-GPT	Serum glutamic pyruvic transaminase
IGF-I	Serum Insulin-like Growth Factor I
SD	Standard Deviation
SE	Standard Error
TLC	Total Leukocyte Count
T2DM	Type 2 Diabetes Mellitus
US	Ultrasonography
U	Unit
UK	United Kingdom
USA	United States of America
USMI	Urethral Sphincter Mechanism Incompetence
VLDL	Very Low Density Lipoproteins

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INTRODUCTION