

Cairo University
Faculty of Veterinary Medicine
Department of Medicine and
Infectious Diseases



STUDIES ON GASTRO-INTESTINAL AFFECTIONS IN DOGS

Thesis presented by:

Wedad Ahmed Abd Allah Ibrahim

B.V.Sc., Cairo University, 2011

(Veterinary Medicine)

For the degree of M. V. Sc. (Internal Medicine)

Under the supervision of:

Prof. Dr. Taher Ahmad Baraka

Professor of Internal Medicine
Department of Medicine and Infectious
Diseases,
Faculty of Veterinary Medicine,
Cairo University

Dr. Noha Yousef M. Salem

Lecturer of Internal Medicine,
Department of Medicine and Infectious
Diseases,
Faculty of Veterinary Medicine,
Cairo University

2015

SUPERVISION SHEET

**STUDIES ON GASTROINTESTINAL
AFFECTIONS IN DOGS**

Thesis presented by

Wedad Ahmed Abd Allah Ibrahim

(B. V. Sc. Cairo University 2011)

Under supervision of

Prof. Dr. Taher Ahmad Baraka

Professor of Internal Medicine

Department of Medicine and Infectious Diseases,

Faculty of Veterinary Medicine,

Cairo University

Dr. Noha Yousef M. Salem

Lecturer of Internal Medicine

Faculty of Veterinary Medicine

Department of Medicine and Infectious Diseases,

Cairo University.

ACKNOWLEDGEMENT

In The Name of Allah, the Most Gracious the Most Merciful

*First thanks of all to **Allah** for blessing me this work until it reached its end.*

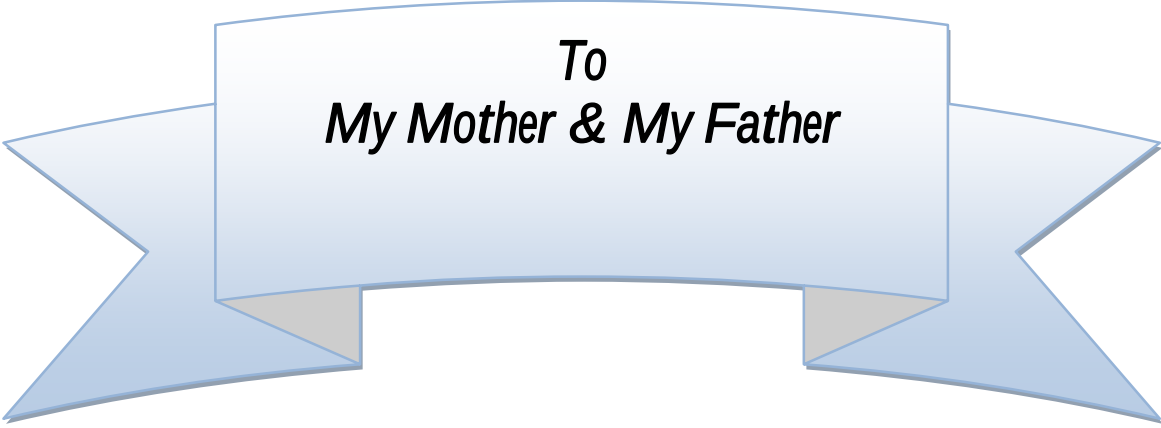
*Words can't express my grateful feeling toward **Prof. Dr. Taher Ahmad Baraka** Professor of Internal Medicine Department of Medicine and Infectious Diseases Faculty of Veterinary Medicine, Cairo University for his academic support and fatherly attitude which will always be engraved in my heart and mind.*

*I would like to express my deepest gratitude to **Dr. NOHA YOUSEF M. SALEM** Lecturer of Internal Medicine Faculty of Veterinary Medicine, Cairo University, for her indispensable help and support.*

*My sincere gratitude to **Dr. Islam Attia Rayan** dean of military veterinary hospital, in Nasr city for his help and support to finish this work.*

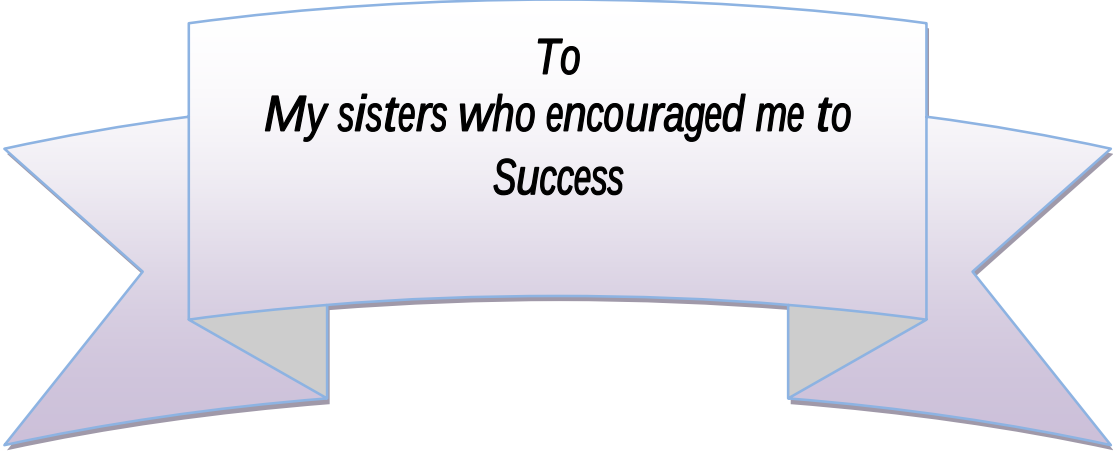
***Finally**, no acknowledgment is complete without thanking my **parents** and my **sisters** for their immense spiritual support during my research work.*

DEDICATION



*To
My Mother & My Father*

*Who have provided never-ending support,
and taught me the value of a life and gave me the opportunity to
pursue my love of pets field*



*To
My sisters who encouraged me to
Success*

Cairo University
Faculty of Veterinary Medicine
Department of Internal Medicine
and Infectious Diseases



Name: Wedad Ahmed Abd Allah Ibrahim
Nationality: Egyptian
Date of birth: 17/6/1989
Place of birth: Cairo Egypt
Degree: M.V.Sc. Veterinary Medicine
Specialization: Veterinary Medicine

Supervisors:

Prof. Dr. Taher Ahmad Baraka

Faculty of Veterinary Medicine,
Cairo University.

Dr. Noha Yousef Salem

Faculty of Veterinary Medicine,
Cairo University.

Title of thesis:

STUDIES ON GASTROINTESTINAL AFFECTIONS IN DOGS

ABSTRACT:

The present study was carried out to investigate: gastrointestinal affections in dogs. This study was applied on 80 dogs; 19 healthy as control group and 61 diseased dogs were divided into 5 groups: enteritis group (7 dogs), gastritis group (7 dogs), gastroenteritis group (26 dogs), hemorrhagic enteritis group (7 dogs) and hemorrhagic gastroenteritis group (14 dogs).

One experiment was applied on Hemorrhagic gastroenteritis group to investigate the effect of adding vitamin C in the treatment regimen in comparison with standard treatments.

The present study performed on dogs admitted to Military Veterinary Hospital in Nasr city, Cairo. All dogs exposed to complete comprehensive clinical and physical examination. Complete blood picture, serum biochemistry of protein and lipid profile, and plasma vitamin C evaluation were applied.

The analysis of serum samples carried out in the Laboratory of Department of Medicine and Infectious Diseases, Faculty of Veterinary Medicine, Cairo University. Significant changes were recorded concerning diagnosis and treatment. The obtained data should be put in consideration and to be taken as guide in diagnosis and treatment of such cases.

Keywords: Dog, gastrointestinal affections, Diagnosis, Treatment.

CONTENTS

Item	Page
I. INTRODUCTION	1
II. REVIEW OF LITERATURE	3
II. 1. Anatomical features of gastrointestinal tract	3
II. 2. Physiology of gastrointestinal tract	4
II. 3. Clinical signs of gastrointestinal affections in dogs	5
II. 4. History and physical examination of gastrointestinal affected dogs	6
II. 5. Body condition scores (BCS) of dogs	7
II. 6. Hematology of gastrointestinal affected dog	8
II. 6. 1. Erythrogram findings	8
II. 6. 1. 1. Total erythrocyte count (TEC)	8
II. 6.1.2. Blood hemoglobin level (Hb)	10
II. 6. 1. 3. Blood packed cell volume (PCV)	11
II. 6. 1. 4. Blood platelets (PLT)	13
II. 6. 2. Red cell indices findings	13
II. 6. 2. 1. Mean corpuscular volume (MCV)	13
II. 6. 2. 2. Mean corpuscular hemoglobin (MCH)	14
II. 6. 2. 3. Mean corpuscular hemoglobin concentration (MCHC)	15
II. 6. 3. Leucogram findings	16
II. 7. Serum protein profile findings.	18
II. 7. 1. Total protein level	18
II. 7. 2. Albumin level	20
II. 7. 3. Globulin level	21
II. 7. 4. A/G ratio	22

II. 8. Lipid Profile Testing	22
II. 8. 1. Cholesterol level	23
II. 8. 2. Triglycerides	23
II. 8. 3. High density lipoprotein (HDL)	24
II. 8. 4. Low density lipoprotein (LDL)	24
II. 8. 5. Very low density lipoprotein (VLDL)	25
II. 9. Plasma vitamin C	25
II. 10. Therapeutic Trials of gastrointestinal affections in dogs	27
III. MATERIAL AND METHODS	29
III. 1. Material	29
III. 1. 1. Animals	29
III.1.2. Blood samples	31
III.1.2.1. Whole Blood samples	31
III.1.2.2. Blood serum samples	31
III.1.2.3. Blood plasma samples	31
III.1.3. Chemicals and Drugs	32
III.1.4. Reagent Kits	34
III.1.5. Examination Chart	35
III.1.6. Serological Studies for Canine Parvovirus	36
III.2. METHODS	37
III.2.1. Clinical Examination of Animals	37
III.2.2. Hematologic Examination	38
III.2.3. Estimation of Selected Serum Biochemical Constituents	38
III. 2. 4. Serological diagnosis of Canine Parvovirus enteritis (CPV)	39
III. 2. 5. Detection of degree of Dehydration	39
III. 2. 6. Statistical Analysis	40

III. 2. 7. Therapeutic regimens of gastrointestinal affections	40
IV. RESULTS	42
V. DISCUSSION	64
VI. Summary	86
VII. conclusion	89
VIII. References	90
Arabic summary	

LIST OF TABLES

Table No.	Legend	Page
Table A	Body condition scoring in dogs.	8
Table B	Animal groups according to the final diagnosis	30
Table C	Drugs.	41
Table.(1)	Physical and clinical examination of gastrointestinal affected dogs.	42
Table.(2)	Erythrogram of gastrointestinal affected dogs.	44
Table.(3)	Red blood cell indices of gastrointestinal affected dogs.	46
Table.(4)	Leucogram of gastrointestinal affected dogs.	48
Table.(5)	Serum protein of gastrointestinal affected dogs.	50
Table.(6)	Lipid profile of gastrointestinal affected dogs.	52
Table.(7)	Physical and clinical examination of dogs suffering from hemorrhagic gastroenteritis before and after treatment.	55
Table.(8)	Erythrogram and platelets of dogs suffering from hemorrhagic gastroenteritis before and after treatment.	56
Table.(9)	Red blood cell indices and leucogram of dogs suffering from hemorrhagic gastroenteritis before and after treatment.	58
Table.(10)	Serum protein of dogs suffering from hemorrhagic gastroenteritis before and after treatment.	60
Table.(11)	Lipid profile and vitamin C in dogs suffering from hemorrhagic gastroenteritis before and after treatment.	62

LIST OF FIGURES

Figure No.	Legend	Page
Fig. (1)	Erythrogram of gastrointestinal affected dogs.	45
Fig. (2)	Red blood cell indices of gastrointestinal affected dogs.	47
Fig. (3)	Leucogram of gastrointestinal affected dogs.	49
Fig. (4)	Serum protein of gastrointestinal affected dogs.	51
Fig. (5)	Lipid profile of gastrointestinal affected dogs.	53
Fig. (6)	Erythrogram and platelets of dogs suffering from hemorrhagic gastroenteritis before and after treatment.	57
Fig. (7)	Red blood cell indices and leucogram of dogs suffering from hemorrhagic gastroenteritis before and after treatment.	59
Fig. (8)	Serum protein of dogs suffering from hemorrhagic gastroenteritis before and after treatment.	61
Fig. (9)	Lipid profile and vitamin C in dogs suffering from hemorrhagic gastroenteritis before and after treatment.	63

LIST OF PHOTOGRAPHS

photo No.	Legend	Page
photo.(1)	Body condition score estimated on 5 point scale.	37
photo.(2)	Medonic CA 620, hematology analyzer device.	38
photo.(3)	Apparently healthy 2 months Husky puppy.	43
photo.(4)	2 months German shepherd puppy showing vomiting.	43
photo.(5)	3 months Great Dane puppy showing bloody diarrhea.	43

LIST OF APPREVIATION

GI	Gastrointestinal
LES	Lower esophageal sphincter
TEC	Total erythrocyte count.
BCS	Body condition score.
RBCs	Red blood cells
Hb	Hemoglobin.
PCV	Packed cell volume.
PLT	Platelets.
MCV	Mean corpuscular volume.
MCH	Mean corpuscular hemoglobin.
MCHC	Mean corpuscular hemoglobin concentration.
TLC	Total leucocytic count.
WBCs	White blood cells.
A/G	Albumin globulin ratio.
VLDL	Very low density lipoprotein.
LDL	Low density lipoprotein.
HDL	High density lipoprotein.
HGE	Hemorrhagic gastroenteritis

I. INTRODUCTION

The gastrointestinal tract of dogs constitutes one of the largest sites of exposure to the outside environment (**DeMeo *et al.*, 2002**).

It is clearly recognized in veterinary practices throughout the world that gastrointestinal (GI) problems are among the most common reasons that pet owners seek veterinary consultation. It is well known that the digestive tract is a very resilient system, capable of withstanding a variety of challenges and insults with minimal untoward effect, and that in many pets with clinical signs such as acute vomiting or diarrhea the problem resolves uneventfully, with or without the benefit of routine supportive care. However, some patients that exhibit acute GI symptomatology have potentially life-threatening disorders (e.g., gastric dilatation-volvulus, intestinal obstruction, pancreatitis, severe parvoviral enteritis, Addisonian crisis), and failure by the clinician to recognize important historical and physical findings may lead to crucial errors in patient management.

(Tams 2003)

Symptoms of gastrointestinal diseases are salivation, halitosis, vomiting, hematemesis, diarrhea, melena, hematochezia, dyschezia, tenesmus, constipation, change of appetite, anorexia, shock. **(Tams 2003)**

physical examination followed by hematology (packed cell volume, as well as white blood cell and platelet count), biochemical screening, a fecal examination were carried out in every case were used for the detection of parasitic ova and intestinal protozoa, respectively **(Rallis *et al.*, 2000)**

The lipid profile in clinical biochemistry is a very important tool for research and diagnosis of several pathologies related to an abnormal lipid metabolism **(Osorio 2009)**. Serum total cholesterol and high-density lipoprotein cholesterol levels decreased, but serum triglyceride level increased in dogs with parvoviral enteritis. Low serum total cholesterol and high-density lipoprotein cholesterol levels may be used as an index of the severity of parvoviral enteritis **(Yilmaz and Senturk 2007)**. Vitamin C plays important role in treatment of gastrointestinal affections in addition to its effect on immune status of patients. **(Levy *et al.*, 1996)**

This work was carried out to investigate:

1. Surveillance of gastrointestinal affections in dogs.
2. Estimation of physical and clinical parameters changes in gastrointestinal affected dogs in comparison with healthy dogs.
3. Laboratory diagnosis of different gastrointestinal affections in dogs.
4. Therapeutic investigation for treatment of hemorrhagic gastrointestinal affection in dogs using standard regimen and evaluation of vitamin C investment in treatment.

II. REVIEW OF LITERATURE

II. 1. Anatomical features of gastrointestinal tract in dogs:

Bardakjian (2000) mentioned that stomach is pyriform in shape. The size of the stomach varies considerably among subjects. While the small intestine is a long hollow organ which consists of the duodenum, jejunum, and ileum respectively. The majority of sugars, amino acids, lipids, electrolytes, and water are absorbed in the jejunum and proximal ileum, whereas bile acids and vitamin B12 are absorbed in the terminal ileum.

Denovo (2003) reported that stomach is a pouch-shaped organ positioned transversely between the lower esophageal sphincter (LES) and the pylorus. The stomach has four functionally distinct anatomic and functional regions. The cardia, fundus, and body are located to the left of midline, whereas the antrum lies mostly in a transverse position to the right of midline. The fundus is the dome-shaped portion of the stomach located left and dorsal to the cardia.

Budras *et al.*, (2007) reported that small intestine consists of duodenum, jejunum and ileum and extends from the pylorus to the opening of the ileum into the large intestine. It is about three and one-half times the length of the body.