

STUDY OF SOME PATHOGENESIS ASPECTS IN PUPPIES AFTER EXPERIMENTAL INFECTION OF PUPPIES WITH *GIARDIA DUODENALIS*

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ABSTRACT : The purpose of this study was to investigate some pathogenesis aspects in puppies after experimental infection with *G. duodenalis* of 10 local breed dogs, age 4 months as experimental infected dogs and 5 dogs as control. A clinical signs of experimental infection of puppies showed mild increased in the temperature and respiratory rate after one week of infection. The results of biochemical tests showed significant increase in the levels of blood sugar and decreased in the insulin and amylase level; significant decreased in the levels of serum cholesterol, triglycerides, VLDL, LDL and HDL, while alkaline phosphatase showed significant increased. The measurement of antibodies concentration revealed that the significant decreased in the concentration of the IgA was found in the experimental infected dogs compared with control dogs, while no significant differences was found in the concentration of the IgG. The measurement of antioxidant concentration demonstrated a significant decreased in the levels of glutathione and superoxide dismutase in the duodenum, liver, gall bladder and pancreas in infected dogs compared with non infected dogs. A different histopathological changes was found in duodenum, Pancreas, gall bladder and liver. Internal tissue (duodenum, pancreas, liver and gall bladder) were Immunohistochemically evaluated for two receptors, which were tumor necrosis factor – alpha (TNF-alpha) and interleukin-6 (IL-6). Tumor necrosis factor – alpha receptor was positive in 80% of duodenum, 60% of pancreas, 50% of gall bladder and 30% of liver of the experimental infected dogs. Duodenum positive (70%) for IL-6 more frequent than of the pancreas, liver and gall bladder (60%, 20% and 60% respectively).

Key words : TNF- α , IL-6, glutathione, superoxide dismutase, *Giardia*, dog.

INTRODUCTION

Giardia duodenalis is a neglected parasites disease. The WHO has reported more than 200 million of human infection each year. Intraepithelial giardiasis is a rare entity, there are only five reported showing invasive giardiasis⁽¹⁾. *G. duodenalis* is intestinal parasite that causes water borne diarrhea in humans and animals especially pet animals (dogs and cats)^(2,3). Giardiasis is may be asymptomatic or symptomatic with foul smelling diarrhea with steatorrhea, abdomen pain, anorexia and weight loss due to malabsorption⁽⁴⁾. *G. duodenalis* has been divided into genotypes. Genotypes A (subgenotypes AI and AII) and B infect human and animals. C and D restricted to infected dogs, and isolated in dogs in Iraq⁽⁵⁾, E infect cattle, F in feline, G was isolated from rats⁽⁶⁾ and H found in marine mammal⁽⁷⁾.

The pathophysiologic mechanism involves trophozoite adhesion to epithelial cell by the ventral

suckling disc, using nonspecific mechanical forces⁽⁸⁾. The interaction between *Giardia* suckling disc and enterocytes lead to a lesion on microvillus border of epithelium⁽⁹⁾ and increase in intestinal permeability⁽¹⁰⁾. In recent studies reported that *G. duodenalis* has been ability to invading host tissue⁽¹¹⁾. In sever giardiasis, impairment of the exocrine of pancreatic function can occur⁽¹²⁾ and present of fat in the feces is result from insufficient exocrine function of pancreas⁽¹³⁾. Inflammatory lesion in hepatic tissue represent as chronic hepatitis was accompanying infection by *Giardia*⁽¹⁴⁾. In giardiasis, some studies recorded significant decreased in serum cholesterol and triglycerides⁽¹⁵⁾ and elevation of serum alkaline phosphatase⁽¹⁶⁾. After *Giardia* antigen recognized by the host is lead to increase production of IL-6, which elevated total IgE as well as local and systemic stimulates, differentiation of B-cell and regulates of IgA production⁽¹⁷⁾. The elevation in production of cytokine tumor necrosis factor alpha (TNF- α) during giardiasis, contributes in