The Effect of Entamoeba *Histolytica* Infection on Levels of Adiponectin and Histamine in Children

Media Mohammed Bakr, Ph.D* Huda Mawlood Taher, Ph. D** Ali Hasan Mohamed, Ph. D***

ABSTRACT

The objective of this work is investigating the effect of *Entamoeba histolytica* on adiponectin and histamine levels in children. The current work was preformed among children aged 8 years to 12 years. The blood and feces samples obtained from children who attended Children's Hospital between June to September 2021. 50 children used in current, who diagnosed with diarrhea and abdominal pain, on the other hand, 25 healthy children, were used in this study as control group. The findings of current study were exhibit significant (P<0.05) reduce in adiponectin levels of infected children compared with healthy children. While the findings of this study exhibit significant elevate in histamine concentration of infected children. So, E. *histolytica* may stimulate the secretion of adiponectin and reduce the release of histamine in children.

Keywords: E. *histolytica*, Histamine, Adiponectin, Amebiasis

INTRODUCTION

E. *histolytica* is a most parasite that infects human gastrointestinal tract. E. *histolytica* include two forms, trophozoite (motile form) that can invade various organs in human body, and a cyst form (long-surviving form) that can colonize in human body[1-4] also cysts can still alive outside body of host from weeks or months, especially under optimum conditions[5], but the cysts are rapidly destructed at temperatures under −5°C and over 40°C [6]. The infection of E. histolytica lead to amebiasis, and according to the location of infection, the amebiasis is classified into two kinds known as intestinal and extraintestinal amebiasis[7,8]. Amoebiasis can be causes a high mortality; about 40,000–70,000 deaths per year[9]. Ordinary symptoms of infection with E. *histolytica* include diarrhea, fever, with abdominal pains. Patients with E. *histolytica* may be suffering from above symptoms with sometimes from extra-intestinal amoebiasis as liver abscess[10]. The trophozoite form can reach to hepatic portal circulation that causes hematogenous diffusion to liver tissue, which lead to produces an inflammatory reaction causing necrotic and degenerative changes in hepatocytes and subsequent formation of abscess[11,12]. The objective of this work is investigating the effect of E. *histolytica* on adiponectin and histamine levels in children.

MATERIALS & METHODS

Samples: The current work was preformed among children aged 8 years to 12 years. The blood and feces samples obtained from children who attended Children's Hospital between June to September 2021. 50 children used in current, who diagnosed with diarrhea and abdominal pain, On the other hand, 25 healthy children, were used in this study as control group

Microscope Examination: The feces samples were examined microscopically to detect E. *histolytica* stages. A drop of normal saline (0.85%) placed on slide, then a drop of diarrheic feces mixed normal saline, then the slide was covered by a cover slip and examined to investigate the detecting of cysts and trophozoite stages[13,14].

Measurements: The serum adiponectin level measured by using the Ray Bio R Human Adiponectin/Acrp30 ELISA kit according to method that mentioned by kit. Histamine concentration (ng /ml) was determined by using ELIZA method according to procedure with kit from Wuhan USCN Chinese Company.

Statistical Analysis: The statistical analysis of present data was done by Minitab program (version 17). The value of parameters was presented as mean ± SD. the P value was determined at 0.05[15-19].

RESULTS

Adiponectin: The findings of this study exhibit significant (P<0.05) reduce in adiponectin levels (5.22±0.49 ug/ml) of infected children compared with healthy children (7.36±0.52 ug/ml) as shown in figure 1.

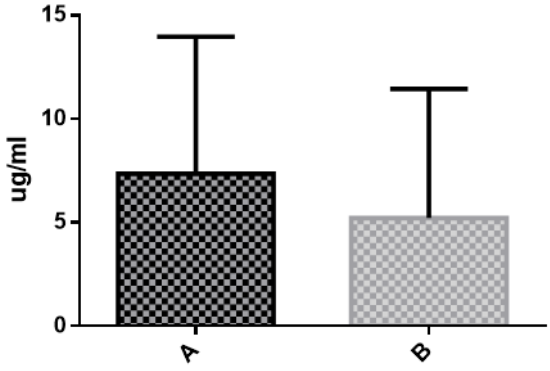

Figure (1): Adiponectin levels in studied groups
A: health B: patient

* Department of Biology, College of Education for Pure Science, University of Kirkuk, Kirkuk, Iraq.
E-mail: meediabakr@uokirkuk.edu.iq
** Department of Microbiology, College of Medicine, University of Kirkuk, Kirkuk, Iraq.
*** Department of Internal and Preventive Medicine, College of Veterinary Medicine, University of Kirkuk, Kirkuk, Iraq.

Histamine: The findings of this study exhibit significant (P<0.05) elevate in histamine concentration (79.13±4.62 ng/ml) of infected children compared with healthy children (61.58±3.05 ng/ml) as shown in figure 2.

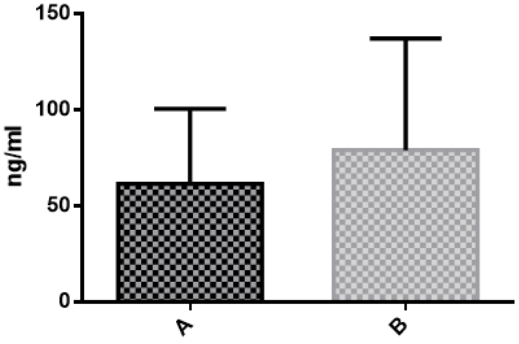

Figure (2): Histamine concentration in studied groups
A: health B: patient

DISCUSSION

Adiponectin is defining as hormone synthesis and released by adipose tissue, is present in blood in high concentrations, suggesting a significant physiological activity[20]. In current study, the outcomes demonstrated a significant decrease in adiponectin levels in children with E. *histolytica* infection, this can may back to damage and destruction of intestinal mucosa like ulceration, shortening of villi and microvilli with swelling of crypts that can activate mesenteric lymph nodes that effect on the absorption process[21]. The current study is agree with study carried out by Yahya et al., who referred that a significant decrease in levels of adiponectin were diagnosed for E. *histolytica* infections compared to healthy group (p = 0.025 adiponectin). Otherwise, the findings of this study exhibit significant (P<0.05) elevate in histamine concentration of infected children compared with healthy children. The elevation in concentrations of histamine in children infected with E. *histolylica* compared to healthy children, because immune response of hosts to infection of E. *histolylica*. The infection of E. *histolylica* can be causes an increased formation of mast cells that responsible of histamine releasing and significant agent in the digestive system as histamine involve in the process of inflammatory[22-25]. The mast cells secrete and produce histamine and other agents to obtain a suitable immune response to the body after allergen or antigen enters into the host body[26].

CONCLUSION

According to the results of current work, it can be concluded that E. histolytica may be led to stimulate the secretion of adiponectin and reduce the release of histamine in children.

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Potential Conflict of Interest: None

Competing Interest: None

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