Serum malondialdehyde level in patients infected with *Trichuris trichiura*

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Intestinal parasites remain a major health problem in many developing countries. There are approximately 60 species of whipworms that infect mammals. *Trichuris trichiura (T. trichiura)*, whipworm gets their name from the characteristic shape of the adults.[1] The World Health Organization estimated that there were 500 million cases of *T. trichiura* infection worldwide.[2] Most infections are asymptomatic. However, as the worms live a long time and a person can be reinfected constantly and heavy worm burdens can develop. Heavy infections cause abdominal discomfort, anemia, bloody diarrhea, rectum prolapse and appendicitis. Diagnosis of trichuriasis is made by detecting the characteristics of eggs in the fecal sample. *Trichuris trichiura* has been associated with dysentery.[3]

Lipid peroxidation is a well-established mechanism of cellular injury in human, and is used as an indicator of oxidative stress in cells and tissues. Lipid peroxides, derived from polyunsaturated fatty acids, are unstable and decompose to form a complex series of compounds. These include reactive carbonyl compounds, which is the most abundant malondialdehyde (MDA). Therefore, measurement of malondialdehyde is widely used as an indicator of lipid peroxidation. Increased levels of lipid peroxidation products have been associated with a variety of chronic diseases in both humans and model systems.[4] The aim of this study was to test the hypothesis of decreased activity of defense system protecting tissues from free radical damage in patients infected with *T. trichiura* by measuring the level of MDA (an end-product of lipid peroxidation), in serum samples.

We assayed MDA activities of 144 subjects aged between 12-48 years (75 males and 69 females). None of them were smokers, had any known pathologies and taking steroids or medications such as iron for anemia at the time of sampling. Serum samples for control group were obtained from healthy people who have come to the different departments of Erciyes University, Medical Faculty for regular check-up and students or employees of the University. Wet mount preparations in 0.9% NaCl, diluted Lugol's iodine and flotation technique in saturated saline solution were used for detection of intestinal parasites. Serum MDA levels were measured by the double heating method.[5] The principle of the method was based on the spectrophotometric measurement of the color occurred during the reaction to thiobarbituric acid with MDA. Concentration of thiobarbituric acid reactive substances (TBARS) was calculated by the absorbance coefficient of MDA-thiobarbituric acid complex and expressed in nmol/ml. Statistical analysis was performed with Statistical Package for Social Sciences Version 11 for Windows.

The difference between MDA levels of patients and control group was statistically significant both for females ($p<0.05$) and males ($p<0.05$), (**Table 1**). In the patient and control group, no correlation was found between age and MDA levels ($p>0.05$) both in females and males. In addition, no significant correlation could be found between MDA levels of both females and males for patients and control group ($p>0.05$). Present study was aimed to evaluate and characterize the relationship between intestinal parasite infection of *T. trichiura*, which can cause serious pathology and oxidative stress mechanism as a mediator of tissue damage concurrent with *T. trichiura* infection. This is the first study to characterize the relationship between *T. trichiura* infection and MDA (lipid peroxidation), which is a well-established mechanism of cellular injury in human, and is used as an indicator of oxidative stress in cells and tissues. *Trichuris trichiura* is one of the most common intestinal parasites of man. The majority of infections are symptomless. The anterior ends of the worms burrow in the mucosa where the worms consume blood cells, although blood loss by this mechanism is negligible. Secondary bacterial infections, possibly coupled with allergic responses, results in colitis, proctitis, and in extreme cases, prolapse of the rectum.

Table 1 - Malondialdehyde levels of patients infected with *Trichuris trichiura* and control group.

Gender	Patient			Controls		
	n	mean age	MDA levels (nmol/ml)	n	mean age	MDA levels (nmol/ml)
Male	38	27 ± 12	0.77 ± 0.23	37	29 ± 19	0.21 ± 0.12
Female	34	24 ± 12	0.75 ± 0.18	35	28 ± 13	0.19 ± 0.13

MDA - Malondialdehyde

Insomnia, nervousness, loss of appetite, vomiting, urticaria, prolonged diarrhea, constipation, flatulence and verminous intoxication. Symptoms may be confused with those of hookworm, amebiasis, or acute appendicitis.[1] Oxidative stress as a mediator of tissue damage concurrent with *T. trichiura* infection was investigated. Levels of MDA were significantly increased in patients infected with *T. trichiura.* The results of our study strongly suggest that one of the main reasons for high MDA levels in patients infected with *T. trichiura* could be decreased activity of defense system protecting tissues from free radical damage. However, in the patients and control group, no correlation was found between age and MDA levels both in females and males. In addition, no significant correlation could be found between MDA levels of both females and males for *T. trichiura* infected and control groups. These results for patients infected with *T. trichiura* could possibly be explained as that with high MDA activity in all ages. As a result, the high infection/control ratio of MDA concentration and the significant correlation strongly indicate the occurrence of oxidative stress and lipid peroxidation as a mechanism of tissue damage in cases of *T. trichiura* infection.

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Hydatid cyst of the cervical region in a child. *A rare location*

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Hydatid disease is caused by parasitic infestation and is still common in under developed countries of sheep rearing regions. But in western countries scrupulous measures have almost eradicated this scourge.

The causative organisms are cosmopolitan parasites, most commonly known as *Echinococcus granulosus* which requires 2 hosts for completion of its life cycle. The dogs and some carnivores are definite hosts harboring mature tapeworm in their intestines. The feces of these hosts contain eggs that become adherent to their body surfaces for dissemination also contaminates the grass and vegetables. The intermediate hosts (humans, sheep and cows) get infected by eating eggs present in feces of dogs. In duodenum, within 8 hours, the hexacanth embryos are hatched out which bore their way through the intestinal wall and are drained to liver by entering the tributaries of portal vein. Mostly these larvae are arrested in the hepatic sinusoidal capillaries (liver acts as first filter). Some larvae escapes through hepatic sinusoids and enter the pulmonary circulation. These are filtered out in the lungs (lungs acts as second filter). A few larvae even pass through the pulmonary capillaries and enter the general blood circulation. These can lodge in various organs including the skeletal muscles. In this study, we are reporting a case of hydatid cyst that presented as a mass in the neck, which is a very rare site.

A 5-year-old female Saudi child was referred by the primary health care center to the Pediatric Surgery out patient clinic of King Khalid General Hospital Hafer, Al-Batin, Kingdom of Saudi Arabia. There was a history of gradually increasing cervical soft tissue swelling for the last 3 years. The findings of the local examination of the neck revealed a single soft to firm mass in the posterior cervical triangle with ill-defined margins, measuring 2.5 x 2 cm. It was relatively mobile horizontally and less vertically. The rest of the clinical systemic examination was unremarkable. The routine laboratory tests were within normal range. Indirect hemagglutination (IHA) test and Casoni's test were carried out postoperatively had a negative result. The x-ray chest, abdominal ultrasound and pelvis were normal. In the out-patient department, fine needle aspiration was performed which had yielded a 3 cc of whitish fluid that revealed mature lymphocytes, eosinophils and polymorphs. A