

SERUM VITAMIN E AND A LEVELS IN CHILDREN WITH AMEBIASIS

Peyami CİNAZ, M.D., Alev HASANOĞLU, M.D., M.Ali AKDENİZLİ, Ph.D.

Gazi University, Faculty of Medicine, Department of Pediatrics, Ankara, Turkey
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SUMMARY : In this paper 35 children with Amebiasis (aged between 6-17 years) and 22 controls were selected to study the serum levels of vitamins E and A. The mean serum vitamin E level was 0.57 ± 0.21 mg/dl in the amebiasis and 0.69 ± 0.21 mg/dl in the control group. Difference between the two groups was statistically significant ($p < 0.05$). The mean serum vitamin A levels were 48.94 ± 14.6 µg/dl in the amebiasis group and 48.09 ± 5.72 µg/dl in the control group. Amebiasis can cause low serum levels of vitamin E in children.

Key Words : Amebiasis, Children, Vitamin E, Vitamin A.

INTRODUCTION

Human infection with *Entamoeba histolytica* has been estimated as 10 % of the world's population (12). The prevalence of amebic infections was about 5-81 % in different countries (15). Infection begins by ingestion of food or water contaminated with parasite cysts (15). To our knowledge we could not find any studies concerning vitamin E and A levels in amebiasis. Since some parasitic infections may lead to malabsorption of fat soluble vitamins we planned to determine serum vitamin E and A levels in children with amebiasis.

MATERIALS AND METHODS

Thirty five children with amebiasis, aged between 6 to 17 years, (median age 11 years) 18 females and 17 males, constitute the patient group. Twenty two children were selected as the control group, 10 females and 12 males, aged between 5-16 years (median age 12). The patients did not have other acute or chronic diseases and drug use. Hematocrit values and peripheral blood smears of all sub-

jects were normal. Duration of symptoms and signs in patients were 0-1 week. Both the patient and the control groups have been selected from similar social welfare and nutrition levels. The key to the diagnosis of intestinal amebiasis was the identification of the trophozoites or cysts in the stool. At least two smears were prepared with saline or formaline-ether sedimentation technique within an hour (14). Symptoms and signs on admission of patients were shown in Table 1.

The serum vitamin E levels were determined by a modification of the spectrophotometric method of Rindi (13). The serum A vitamin levels were measured by the method of Neeld Pearson (5). The results of the studies were analyzed by Student's t-test (6).

RESULTS

Vitamin E and A levels were shown in table 2.

The mean serum vitamin E levels were 0.57 ± 0.21 mg/dl (0.24-0.94), 0.69 ± 0.12 mg/dl (0.44-

	No. of patients	Percent
Diarrhea	35	100% (bloody in 8.5%)
Abdominal pain	20	57.1 %
Anorexia	14	40.0 %
Fever	8	22.8 %
Vomiting	3	8.5 %
Growth Retardation	2	5.7 %

Table 1 : The signs and symptoms of the patients.

0.86) in amebiasis and control subjects respectively. The difference between two groups was found to be statistically significant ($p < 0.05$) (Fig 1). The mean serum vitamin A levels were $48.94 \pm 14.6 \mu\text{g/dl}$ (30.4 -72.4) and $48.90 \pm 5.72 \mu\text{g/dl}$ (36.6-59.1) in the two groups, and these results were un-significant ($p < 0.05$) (Fig 2).

DISCUSSION

Intestinal amebiasis is often considered a disease of developing countries. It is however an important public health problem throughout the world. At least 90 % of infected patients are asymptomatic (1). This infection is localised in the caecum, trans-

	Serum vitamin E level (mg/dl)	Serum vitamin A level ($\mu\text{g/dl}$)
Amebiasis (n=35)	0.57 ± 0.21	48.94 ± 14.6
Control (n=22)	0.69 ± 0.12	48.90 ± 5.72
	$p < 0.05$	$p > 0.05$

Table 2 : Mean serum vitamin E and A levels in amebiasis and control group.

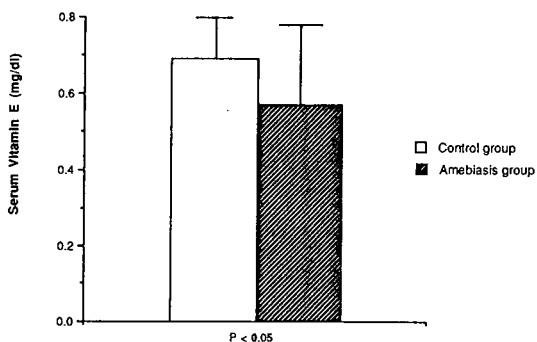


Fig - 1 : Mean vitamin E levels in Amebiasis and control groups.

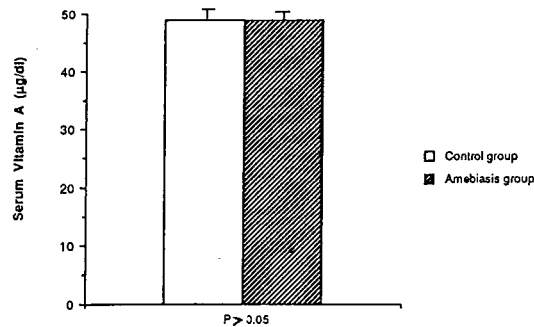


Fig - 2 : Mean vitamin A levels in Amebiasis and control groups.

verse and sigmoid colon, thus colonic transport is changed (9). The intestinal absorption of vitamin E and A is not exactly known in amebiasis. But the low serum level of vitamin E in celiac disease, cystic fibrosis, biliary atresia, jejunal diverticula, hepatic cholestasis, cirrhosis, fulminant hepatitis, partial gastrectomies and giardiasis were shown in previous studies (2, 4, 5, 7, 11, 17). Normally, vitamin E is fat soluble - antioxidant and bile is necessary for its absorption. Its deficiency causes the hemolytic anemia and neurologic changes (15). The patients did not have any disease affecting the intestinal absorption, except the amebic infection. The level of serum vitamin E was found significantly lower in 66 % of our patients ($p < 0.05$). As far as we know we could not find similar studies in the literature. It can be assumed that vitamin E deficiency could occur in giardiasis and amebiasis (speculated that in giardiasis, amebiasis can also lead to vitamin E deficiency).

Perhaps, vitamin A decrease in dietary intake, because of anorexia, could result in vitamin E deficiency or impaired absorption of vitamin E could occur secondary to abnormalities in intraluminal or mucosal processes in amebiasis. Vitamin A plays a role in keratinization and growth (15). The deficiency can occur due to inadequate intestinal absorption. The decreased levels of vitamin A were shown in children with giardiasis and ascariasis in previous studies (6, 8). The interrelation between vitamin E and A has not clearly been established however the increased absorption and storage of vitamin A by vitamin E has been shown previously (1). It is al-

so known that vit E prevents the oxidating of vitamin A in serum. It contrast to the previous studies except for four patients, the vitamin A levels in amebiasis group were within normal levels. It can be speculated that normal vitamin A levels found in our patients may be due to its storage in the liver, and after a period of time its level like vitamin E may decrease. Children who had a history of recurrent diarrhea and acute respiratory infection have been determined to have low serum vitamin A levels (3).

Thus, we emphasize that the absorption of fat-soluble vitamins, especially vitamin E, may vary in parasitic infection of children. The treatment should be given as soon as the amebiasis is diagnosed and the control of this infection can be achieved by exercising proper sanitary measures.

Correspondence to : Dr.Peyami CİNAZ
Gazi Üniversitesi Tıp Fakültesi
Pediatri Anabilim Dalı
Beşevler
06510 ANKARA - TÜRKİYE
Phone : 312 - 214 10 00 / 6008

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