

Parasitic Protozoan among Restaurant Workers in Tabriz (East Azerbaijan Province) Iran

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Abstract: To identify intestinal protozoan among restaurant workers in Tabriz (East Azerbaijan province), Iran in 2009. Stool specimens were collected and examined from total of 300 restaurants workers at Veterinary Faculty, Islamic Azad University of Tabriz Branch. Three types of techniques were used; direct examination, saline sedimentation and formol-ether concentration. The positivity in majority of them was single infection whereas 3 cases were double infection that constituted 1% of the prevalence. The prevalence was 14.4% for *Entamoeba histolytica*/dispor and 5.9% for Giardia and total prevalence percentage of fecal samples that contaminated with parasitic protozoan was 20.32%. The double infection was only with *E. histolytica*/dispor and Giardia. The infection with these parasites were also accompanied by abdominal troubles diarrhea, constipation, nausea and vomiting. These results lead to understand that sanitary measurements are not effective and these hazardous situation facilitate parasitic agent's distribution among clients. The effectiveness of current pre-employment screening policy must be annual and systematic surveillance is needed in addition to health education.

Key words: Parasitic protozoan, restaurants workers, Tabriz, health education, nausea, Iran

INTRODUCTION

Survey on intestinal parasites among restaurant workers was done in all over the world (Abahussain, 2005; Chatterjee, 2006; Fallah and Amirshakery, 2006; Ali *et al.*, 1992; Khan *et al.*, 1987). The effect of one simple hand washing of Iranian restaurant workers in decrease of food microbial infection by hands were shown by Shojaei *et al.* (2006). The aim of this study is show contamination rate of intestinal protozoan parasites among restaurant workers (foodhandlers) in Tabriz city (Center of East Azerbaijan province). This group of restaurant workers for direct contact with different classes of society have very importance role in distribution of parasitic agents.

MATERIALS AND METHODS

This survey is one cross-sectional study and from May, 2009 to Sep, 2010 in Tabriz city for determination of contamination rate to intestinal protozoan parasites among restaurants workers was done. In the beginning, a total of 300 restaurant workers were submitted to answer the survey questionnaire, one designed form consist of valid hygiene certificate, symptoms of parasitic disease, education level, workers literacy, etc. were delivered to restaurants workers for completing. The restaurants workers were examined by one clinical doctor and then some fresh fecal sample were received of them. The 270 (90%) of restaurants workers cooperated. All fecal

samples of restaurants workers were examined by 3 Currency Fecal Examination Method (direct examination, saline sedimentation and formol-ether concentration) in Parasitology Laboratory of Veterinary, Faculty of Islamic Azad University, Tabriz Branch (Garcia and Bruckner, 1988; Sheth and Dwivedi, 2006).

RESULTS AND DISCUSSION

Table 1 shows the prevalence rate of intestinal protozoan parasites among restaurant workers in Tabriz city. Also type of intestinal parasites and percent of them has been discussed in Table 1. *Entamoeba histolytica* with 50% show maximum infestation rate. In this survey, only 2 persons of workers infected with intestinal *Schistosoma mansoni* were observed that this 2 person belong to other regions of Iran which this parasites in this region is current. Table 2 shows infected person with abdominal disorders and relation between main parasites with abdominal troubles in Tabriz city, i.e., *E. histolytica* and Giardia. Nausea and vomiting in all of these infections were observed. Table 3 shows education level of Tabriz restaurants workers.

Table 1: Percentage and prevalence of intestinal protozoan parasites in stool examination of restaurants workers

Type of parasites	Parasites (%)	No. of infected	Prevalence(%)
<i>Entamoeba histolytica</i> /dispor	75	39	14/4
<i>Giardia lamblia</i>	25	16	5/9
Total	100	55	20/3

Table 2: Restaurant workers complaints vs. percentage and parasitic infections

Symptoms	Number	Percentage	<i>Giardia</i>	<i>Entamoeba</i>
			<i>lamblia</i>	<i>histolytica</i> /dispor
Abdominal pain	31	11/44	0	17
Constipation	9	3/3	0	0
Diarrhea	49	18/14	14	35
Fever	37	28	7	24
Distention	20	7/4	13	7
Nausea and vomiting	41	31	7	25
No symptoms	12	9	0	5

Table 3: Education levels of restaurant workers

Education level	Number	Percentage
Illiterate	46	17/03
Primary school	162	60
Secondary school	62	22/9
Total	270	100

Parasitic infections have very importance in human life because this agent causes a dangerous disease in human. World Health Organization (WHO) has been reported which diseases causes by infected foods is one of largest hygienic problems in the world (Sheth and Dwivedi, 2006). Multilateral identification of parasites, especially distribution agents of them (eggs and cysts) is secure way for determining of parasites percent and prevalence rate in societies. Restaurant workers are very susceptible population for distribution of parasites infections because these persons have direct contact with restaurant customers. Incidentally, the infected person with intestinal parasites disease have very dangerous role for general hygiene of society, especially if this person in shopping center is being done therefor, this person are counted as reservoir and source for parasitic infections (Khan *et al.*, 1987). Intestinal parasites have been reported in restaurant workers of very country in all over the world (Abahussain, 2005; Fallah and Amirshakery, 2006; Ibrahim *et al.*, 1993; Ali *et al.*, 1992; Kalantan *et al.*, 2001; Khan *et al.*, 1987; Nolla and Cantos, 2005).

In Brazil 44.9%, in Saudi Arabia 31.4% and in Yamane 28.7% has been reported. In Tabriz city, intestinal parasites of restaurant workers, 33% have been reported (Fallah and Amirshakery, 2006). Prevalence rate of intestinal parasites in restaurant workers of Tabriz city in comparison with previous studies is low and in this study, many of parasites in restaurant workers were not identified. *Entamoeba histolytica*/dispor and *Giardia lamblia* with maximum infestation rate in this study were reported and most clinical signs of these parasites are abdominal disorders and diarrhea. Incidentally, nausea and vomiting in all of these infections was seeing (Garcia and Bruckner, 1988; Chatterjee, 2006). The majority of infected restaurant workers are symptomatic but they were not proclaiming their suffering for unknown personal reasons so, they may be considered as infections carriers. The infected restaurant workers with clinical signs or

without clinical signs are risk factor for public health of society. Contaminated food plays major role in the occurrence of diarrhea disease (Shojaei *et al.*, 2006).

In this survey, all restaurant workers with diarrhea had been infecting to *Entamoeba histolytica*/dispor and *Giardia*, these two parasites with direct contact and customary manner transmission to customers of restaurants and with one simple hand washing by workers decreased from 72.7-32% (Shojaei *et al.*, 2006). In fact, the aim of this study was determination of contamination rate to intestinal protozoan parasites among restaurant workers that they have all valid employment certificates (these persons had been working in restaurants). This will help the authorities to review their laws of employment. By attention to increase of food origin diseases, complete health of food has not been attention by hygienic managers and restaurant workers (Kafarstein and Abdussalam, 1999).

It is to be known that hygienic measurements concerning the restaurant workers as food handlers must be considered in the first category of measurement control and the periodical supplement of health performance must be obligatory for each worker. Most restaurant workers are illiterate or have primary school education (Table 3) and without any attention to hygienic standards transmission the parasites agents to other persons and this problem will be causes increase in risk of hygiene and health in society.

It is the responsibility of the Ministry of Health to motivate all the control rules in restaurants, school canteens and all cites of human propagation in order to minimize the distribution of intestinal parasitic agents.

CONCLUSION

Food safety education is a critical pre-requisite and health education in general should be increased to raise awareness of the society about intestinal parasites problems (Abahussain, 2005; Kalantan *et al.*, 2001; Nolla and Cantos, 2005; Sheth and Dwivedi, 2006) so, researchers are in need for constant epidemiological surveillance through periodical surveys parallel with development of healthcare towards the problem of parasitic infections.

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