Frequency Distribution of Intestinal Parasitic Infections in Diabetic Patients–Yazd 2013

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Abstract

Objective: Diabetes is now known as one of the chronic diseases that besides body have negative effects on the psychological status of patients and it is one of the predisposition diseases which can lead to opportunistic infection like pathogens parasites. The aim of present study was Frequency distribution of intestinal parasitic infections in diabetic patients – in Yazd.

Materials and Methods: This descriptive and cross sectional study was performed on 500 stool samples of Diabetic patients and healthy individuals with cluster random sampling in Yazd diabetes research centers from December 2012 to December 2013. Stool samples were collected, fixed and examined by Formalin- ether method (FEM) for detecting pathogen.

Results: In this study 500 stool samples [250 (92 men and 158 women) from control and 250 (91 men and 159 women) from diabetic patients] were collected. The results of this study indicated that intestinal parasites rate in diabetic patients is higher (61:24.4%) than healthy control group (58:23.2%).

Conclusion: The results showed a high prevalence of risk factors for diabetes complications and intestinal parasitic. Due to in Immunocompromised patients, it need for establishment of Diagnostic methods are emphasized.

Keywords: Intestinal parasites, Diabetes, Diabetes research centers, Yazd.

Introduction

Diabetes is a chronic metabolic occurs when the human body is not able to produce enough insulin or because cells do not respond to the insulin that is produced. High blood sugar produces symptoms of frequent urination, increased thirst and hunger (1,2). All types of diabetes should be treated under a close collaboration between patients and healthcare providers in order to prevent long-term complications such as damage to the eyes, kidney, feet and heart. People with diabetes must be treated to avoid early death. The number of people with diabetes is increasing due to population growth, aging, urbanization, and in- creasing prevalence of obesity and physical inactivity. Quantifying the prevalence of diabetes and the number of people affected by diabetes, now and in the future, is important to allow rational planning and allocation of resources. In the worldwide, it is estimated that some 3.5 billion people are affected, and that 450 million are ill

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as a result of Intestinal parasites and protozoan infections .the majority being children, as they cause iron deficiency anemia, growth retardation in children and other physical and mental health problems (3-5). The developing countries are more prone to intestinal and extra-intestinal parasitic diseases causing important public health problems (6). The estimated prevalence of diabetes in adult population (20-79 years old) and impaired glucose tolerance expressed in percentages are used as metrics. Interactive data visualization was designed to explore the data and communicate the findings. Globally in 2013, it is estimated that almost 382 million people suffer from diabetes (8.3%) (7-9). Diabetes mellitus is one of the predisposition diseases which can lead to opportunistic infection like pathogens parasites. The prevalence of the diabetic patients infected with intestinal parasite in Country is almost undetected and the efficacy of the treatment or preventive methods are obscure. Although intestinal parasites usually create benign diseases, sometimes they may cause complications with high mortality and morbidity. It is known that diabetic patients are more susceptible to bacterial infections. Decreased arterial perfusion, neuropathy, and suppressed immune response in diabetes aggravate the frequency and severity of infectious diseases (10). The aim of present study was Frequency distribution of intestinal parasitic infections in diabetic patients – in Yazd.

Materials and Methods

This descriptive and cross sectional study was performed on 500 stool samples of Diabetic patients and healthy individuals with cluster random sampling in Yazd diabetes research centers from December 2012 to December 2013. Stool samples were collected, fixed and examined by Formalin- ether method (FEM) for detecting pathogen parasites. Ziehl-Neelsen staining (ZNS) for detecting intestinal coccidian parasites in briefly: Deparaffinize and hydrate to distilled water. Carbolfuschin solution, microwave 80 power, 45 seconds, allows slides to stand in hot solution for 5 minutes. Filter solution once a week. Wash in running tap water. 1% Acid alcohol until light pink and color stops running. Wash in running tap water for five minutes. Rinse in distilled water. Methylene blue stain for 30 seconds. Rinse in water. Dehydrate, clear, and cover slip. Conventional Method: 60°C oven for 1 hour. Finally, the samples were examined under a microscope and the results were recorded (11,12).

All of statistical analysis was done by SPSS 20. The normal distribution of data were checked. Mean, standard deviation, minimum and maximum were calculated for descriptive analysis. Independent t-test and Chi square were used. The statistical significances considered as 0.05.

Results

In this descriptive and cross- sectional study, 500 stool samples [250 (92 men and 158 women) from control and 250 (91 men and 159 women) from diabetic patients] were collected.

In the control group:

There were 130 (52% male) and 120 (48%) female. 26-35 age group was highest with 90 (36%) and 46< age group was lowest with 12 (4.8%) and showed a significant difference (P<0.05). Job group of housewife with 70 (28%) was highest and the employee group with 28 (9.6%) was lowest and showed a significant difference (P<0.05). Educational group of diploma and upper with 81 (32.4%) was highest and license and upper group was lowest with 44 (17.6%) and did not show a significant difference (P>0.05). (Table 1).

In the diabetic group:

There were 109 (43.6% male) and 141 (56.4%) female. 36-45 age group was highest with 99 (39.6%) and 46< age group was lowest with 15(6%) and showed a significant difference (P<0.05). Job group of self-employed with 59 (23.6%) was highest and the worker group with 45 (18%) was lowest and showed a significant difference (P<0.05). Educational group of illiterate with 85 (34%)

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Table.1. Frequency distribution of common and unusual diagnosis methods in control and diabetic groups.

Variables	Diabetic	Control	*P*-valu
Genus	**N%**	**N%**	
Female	141(56.4)	130(52)	>0.05
Male	109(43.6)	120(48)	
Age group			
5-15	20(8)	15(6)	
16-25	30(12)	75(30)	>0.05
26-35	86(34.4)	90(36)	
36-45	99(39.6)	58(23.2)	
46<	15(6)	12(4.8)	
Job			
Worker	45(18)	30(12)	
Employee	50(2)	66(26.4)	
Self-employed	50(20)	24(9.6)	>0.05
Housewife	59(23.6)	70(28)	
Retired	46(18.4)	60(26)	
Education			
Illiterate	85(34)	65(26)	
Under Diploma	70(28)	60(24)	>0.05
Diploma and Technician	65(26)	81(32.4)	
License and higher	30(3.12)	44(17.6)	

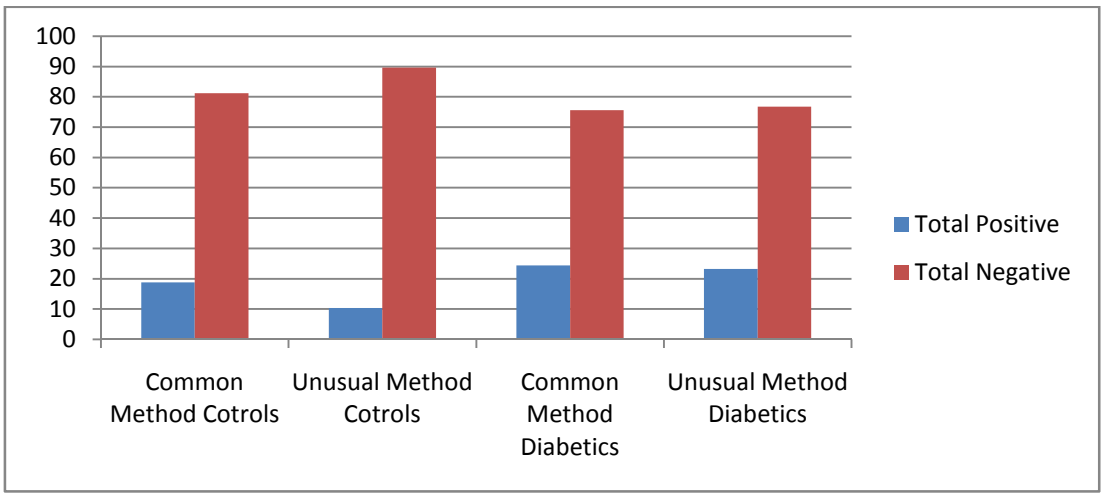
was highest and license and upper group was lowest with 30 (12%) and did not show a significant difference (*P*>0.05) (Table.1).

The results of this study indicated that intestinal parasites rate in diabetic patients is higher (61: 24.4%) than healthy control group (58: 23.2%). In the control group at least one of the following intestinal parasites was observed: Giardia lamblia (9:3.6%), Entamoeba coli (9:3.6%), Cryptosporidium (6:2.45%), Blastocystis hominis (6:2.4%), diabetic group Iodamoeba butschli (2:0.8%), Ascaris lumbricoides (2:0.8%), Hymenolepis nana (2:0.8%), 4 nucleated cyst (1:0.4%), Endolimax nana (1:0.4%) and Trichomonas hominis (1:0.4%). and in the at least one of the following intestinal parasites was observed: Giardia lamblia (9:3.6%), Entamoeba coli (9:3.6%), Cryptosporidium (6:2.45%), Blastocystis hominis (6:2.4%), diabetic group Iodamoeba butschli (2:0.8%), Ascaris lumbricoides (2:0.8%), Hymenolepis nana (2:0.8%), 4 nucleated cyst (1:0.4%), Endolimax nana (1:0.4%) and Trichomonas hominis (1:0.4%) (figure1).

Discussion

There is ample evidence indicating that the incidence of certain infections in these patients increased opportunistic hypothesis Abnormal and failure mechanisms of the immune system (Host defense to justify the). In general, the prevalence of intestinal parasites detected in the present study was similar to a previous study in Akhlaghi (13), Somolinos (14) and Broxton (15). Since diabetes is a metabolic disease, according for these individuals the immune system to normal the difference seems to be that many of the outbreaks Parasites are also different from normal (16,17). Intestinal parasitic infections are widespread, soil-transmitted affecting humans. Direct and indirect occurs in their infection and this leads to a continuous build-up of parasites burden in human host. This may lead to hyper infection syndrome which has the potential to cause serious life-threatening disease especially in Diabetics, Immunocompromised and immunosupressed patients. Thus, patient with underlying risk factors should be suspicious of having intestinal parasitic infection (18-21).

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Chi- Square Test $P>0.05$

Figure 1. Frequency distribution of common and unusual methods in control and diabetic groups.

Conclusion

Detection of cryptosporidium and Isospora and the other intestinal coccidian is uncommon in routine stool Examinations in most laboratories and there is not also request to examine sporozoan parasites in stool. Due to cryptosporidiosis in immunocompromised patients, the need for establishment of Diagnostic methods are emphasized.

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