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Distribution of Some Intestinal Protozoa in Iraq

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Abstract

Intestinal protozoan parasites Giardia lamblia and E.histolytical/dispar are quite common and they seriously affect public health in the underdeveloped nations. With the use of the Ministry of Health's surveillance database, which has been made available, the research's objectives were to ascertain the prevalence regarding G. lamblia and E.histolytical/dispar quantifying its gender, age, and region-related prevalence in a population drawn from 11 provinces in Iraq between January 2021 and December 2021. The prevalence was noticeably greater than that of G. lamblia and E.histolytical/dispar. The prevalence of both was observed to differ depending on the age group (21–30), sex (greater in males), and regions (higher in Middle region). The present investigation yielded reduced incidence rates when compared with comparable research carried out in Iraq. This might potentially be attributed to factors such as seasonal diversity, sample size, enhanced personal hygiene, and availability of public health services.

Introduction

Both in developing and developed nations, diarrheal diseases are widespread and are regarded as important contributors to mortality and morbidity [1]. G. lamblia and E.histolytical/dispar the primary intestinal parasite agents are among the bacteria, viruses, and parasites that can cause diarrhea [2–3]. Those species are significant and extensively distributed pathogens that pose a serious threat to public health and medicine in emerging nations [4], causes amoebic liver abscess, amoebic dysentery, and colitis, which together account for 100,000 fatalities each year [5], whereas giardiasis affects 5–10% of the population [6]. G. lambila and E.histolytical/dispar can potentially transfer from between individuals by fecaleoral contact, and are usually conveyed by contaminated drinking water and/or food [7]. Several studies reported varying levels of G. lamblia prevalence in Iraq. The frequency of G. lamblia and E.histolytical/dispar varied from

3.8% to 48% and 3.7% to 33.8%, in that order [8,9]. While a few researches concentrated on the prevalence associated to occupation and gender [8,9], others examined the connection between gastrointestinal parasite infection as well as anemia [10]. From yearly and seasonal studies, it is still unknown how widespread such viruses are geographically and how much of a burden they place in different regions. The current research's objective has been to evaluate G. lambilia and E.histolytical/dispar prevalence and infections amongst Iraqis across all governorates using the Ministry of Health's Iraqi Communicable Diseases Control Center (CDCC) database.

Methods

With the use of surveillance database that was obtained from Iraqi CDCC at the Ministry of Health (MOH), this retrospective study included a temporal and spatial examination of reported G. lambilia and E.histolytical/dispar cases and infections from January 1 to December 31, 2021. Microscopic analysis verified the Giardia and E.histolytical/dispar diagnosis. of Iraq's11 provinces provided data. 20,100 patients in all were assessed as part of the survey. The geographic distribution regarding Iraqi governorate from north to south was taken into consideration when organizing the data on infection for every parasite. CDCC database was after that used to merge the 11provinces into 2groups: Group from the South: Basra, , Thiqar, Miasan, Muthanna, Babil, and Diwaniya . Group of provinces along the Middle: Karbala, Wasit, Baghdad , Diyala, and Najaf. Each parasite's infection data was categorized based on the patient's gender and the seasonal variations between January and December. The following data have been evaluated based on the age distribution within the groups.

Results

Table (1): The prevalence of E.Histolytical/Dispar and Giardia of age group.

Age Group	E.Histolytical/Dispar	G.Lammblia
>0 – 10	4042(8.83%)	2050(10.19%)
11 – 20	7300(15.96%)	4300(21.39%)
21 – 30	14050 (30.72%)	6100(30.34%)
31 – 40	13776(30.12%)	5400(26.86%)
>40	6560(14.34%)	2150(10.69%)
Total	45728	20100

Table (2): The prevalence of E.Histolytical/Dispar and Giardia of regions and seasonal in Middle and South Provinces in Iraq.

Regions	E.Histolytical/ Dispar	G.Lammblia
Middle Regions	25132(54.95%)	10514(52.30%)
South Regions	20596(45.04%)	9586(47.69%)
Season	E.Histolytical/ Dispar	G.Lammblia
Winter	23128(50.57%)	11100(55.22%)
Summer	21400(46.79%)	9000(44.77%)

Table (3): The Prevalence of E.Histolytical/Dispar and Giardia of Provinces in Middle and South Iraq

Province	E.Histolytical/Dispar	G.Lammblia
Baghdad	7942(17.36%)	4158(20.68%)
Wasit	3734(8.16%)	1482(7.37%)
Diylala	8523(18.63%)	2248(11.18%)
Karbala	3040(6.64%)	1758(8.74%)
Najaf	1893(4.13%)	868(4.31%)
Thi-Qar	2285 (4.99%)	791(3.93%)
Basra	981(2.14%)	546(2.71%)
Miasan	1256(2.74%)	848(4.21%)
Muthanna	2578(5.63%)	1002(4.98%)
Diwaniya	2293(5.01%)	1447(7.19%)
Babil	11283(24.67%)	4952(24.63%)

Table (4): The prevalence of E.histolytical/dispar and Giardia of sex in middle and south province / iraq .

Sex	E.Histolytical/Dispar	G.Lammblia
Male	25128(54.95%)	11891(59.15%)
Female	20600(45.04%)	8209(40.84%)

The Province of Thi-Qar reported the lowest prevalence rates of G. lamblia,while The province of Babil. greatest prevalence rates. Comparable findings have been noted for the prevalence of E.histolytical/dispar. the highest prevalence rates Babil of E.histolytical/dispar; the provinces with the lowest prevalence were Basra of E.histolytical/dispar (Table1). G. lamblia prevalence varied significantly (p less than 0.05) between the regions. According to Table 2, the middle region had highest rates of prevalence of G. lamblia , whereas the south region had the lowest rates of prevalence .middle region in E.histolytical/dispar highest rates of prevalence from of south region. seasonal variations were seen in the research, with G. lamblia prevalence being highest in the winter and lowest in the summer. In Table 2, the seasonal variations is provided. The surveyed population's age groups showed significant (p less than 0.05) differences, according to the results.The age group of 21 to 30 years had the highest G. lamblia and infection frequencies, whereas the age group of 1-10 year and older had the lowest infections and E.histolytical/dispar highest in age group of 21-30 . and E.histolytical/dispar lowest in age group of 1-10 Females and males differed significantly, with males reporting more cases and G. lamblia compared to females

Discussion

displays the distribution of gender and age results were noticeably greater compared to those for G. lamblia and E.histolytical/dispar that might be attributed to activity of the cysts in the surrounding environment. Although our results differed with those of Al-Warid, 2011 [9], who claimed that G. lamblia incidence has been significantly greater when compared to the incidence of E.histolytical/dispar, they have been in agreement with results by Al-Warid etal., 2011 [11] and Sultan and AlKhaysee, 2008 [12]. Variations in prevalence of such intestinal protozoal parasites among studies could be caused by a number of variables, such as dietary, geographic, environmental, socioeconomic, and health-associated behaviors [16]. Geographically, G. lamblia and E.histolytical/dispar distribution differed greatly, with higher prevalence rates seen in the middle regions compared to the south regions. Certain intestinal parasite species have been found to exhibit geographic patterns, which could be attributed to varying ecological determinants of transmission. Those patterns could be influenced by the degree of development in the affected areas [17] and variations in the average living standards

across the provinces. The findings of Bisht etal., 2011 [18], which demonstrated that geographic location affects parasitic diseases' prevalence, were consistent with our findings. It has been demonstrated that G. lamblia and E.histolytical/dispar prevalence is significantly influenced by seasonality. The winter seasons have the highest prevalence rates form summer seasons. This finding was in line with recent research that demonstrated high peak incidence of such parasites happened throughout rainy seasons [19] and findings that suggest Giardia and cysts are more infective throughout the colder months than they are throughout the dry ones [20,21]. G. lamblia and E.histolytical/dispar prevalence in the population we investigated have been both significantly influenced by gender and age. The age range of 21 to 30 years old accounted for almost all G. lamblia and E.histolytical/dispar positive samples. This could be because individuals in such age group have a higher likelihood to be involved in several work activities which could expose them to contamination through contaminated soils, food, or water [22]. This result is consistent with recent reports that indicated a higher incidence of some gastrointestinal parasite infections in individuals aged 21 to 30 when put to comparison with other age groups [23]. However, no significant correlation has been observed between infections and age. Another important factor that affected the prevalence regarding such protozoan parasites in this study was gender. Males comprised almost all positive cases that were reported. This is most likely due to the fact that, although females might stay home throughout outside activities, males are more likely to be exposed to unsanitary conditions in fields [24]. Additionally, this outcome is consistent with earlier reports [25,26,27]. In summary, the group under study had a greater prevalence of than G. lamblia, E.histolytical/dispar according to our report's findings. Those results point to the necessity of long-term controls to enhance living and sanitary circumstances, particularly in areas with high prevalence. Organized health and education initiatives could potentially increase the effect of sch interventions by promoting healthy behaviors and reducing the prevalence of these parasites.

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