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Isolation and detection some factors causes diarrhea in children

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Abstract

The study was carried out to isolation and detection some of pathlogical agent of diarrhea disease for year(2009-2010-2011)all state take from one of health care center in kerbala total of it (1626)patients ,(443)case for year 2009 ,()451)case for year 2010,(732)case for year2011.The results showed that the number of patient in female more than male for year(2009,2010)reached in male and female (158,285) for year 2009 respectively while reached in male and female (211,240)for year 2010 respectively .The sample of water tested by[diethyl paraphenyel diamine(DPD)]chlorine were less than normal or negative Water culture showed growth of E.coli and other microorganisms. Stool examination showed high rate of E.coli,G.lambilia and E.histolytica.

الخلاصة

أظهرت نتائج الدراسة التي أجريت لمعرفة وعزل بعض المسببات المرضية لمرض الإسهال للأعوام(2009-2010-2011) أخذت العينات من احد المراكز الصحية في محافظة كربلاء والتي بلغ مجموعها الكلي (1626) حالة إصابة للأطفال دون سن السابعة منها(413)حالة إصابة للعام2009 و(451) حالة للعام 2010و(732)حالة للعام2011اظهرت الدراسة ان عدد المصابين من الإناث أعلى من الذكور للعامين 2009و2010اذ بلغت حالات الإصابة للذكور والإناث للعام 2009(185و285)على التوالي بينما بلغت للذكور والإناث للعام 2010(211و240) على التوالي.كما بينت النتائج عند فحص الكلور بطريقة داي اثيل برا فينيل داي امين على العينات التي جمعت من مصادر مختلفة للماء ان نسبة الكلور فيها اقل من الطبيعي ومعدومة في بعضها.كما تم زرع عينات من الماء ظهر فيها نمو الكائنات الدقيقة اشيريشيا كولاي وغيرها المسببة للإسهال.كما تم فحص عينات البراز من المصابين فكان هناك ارتفاع ملحوظ في E.coli ويليها G.lambiliaثم E.histolyticaولجميع الأعوام.

Introduction

Diarrhea is a major cause of death and disease, especially among young children in low-income countries. Loss of fluid (dehydration) is the major threat, though diarrhea also reduces the absorption of the nutrients, causing poor growth in children, while many of the infectious agents resistance to infection such as dysentery, cholera and typhoid(1). These illnesses caused by many kinds of germs ,waste ,unsafe water ,flies, insects and on food the children die from diarrhea because they do not have left in their bodies(2).People of any age can be become dehydrated but dehydrated can happened very quickly to small children and is most more dangerous for them(3). Diarrhea kill an estimated 1.8 million people each year and among infection disease its third leading cause of mortality and morbidity after respiratory infection and HIV/ADIS(4).Among children less than five year diarrhea accounting for17% of all death a wide variety of bacterial ,viral and protozoa excreted the faces of human and animals are known to cause diarrhea such as: *Escherichia coli,Salmonella sp,Shigilla sp,Campylobacter jejuni,Entameba histolytica ,Gardia lambilia.*the important of individual pathogens varies between setting ,season and conditions(5).A new rotavirus vaccine licensed in united state in early 2006 and30% of hospitalization for watery diarrhea among children less than 5 year (6). Epidemiology study in Bangladesh show that the rate of diarrhea in children 1-7 years old is ten times higher than adults(7). In kerbala E.coli and G.lambilia is the most common parasite cause of diarrhea in children(8).G.lambilia infection small intestine it prevalent among people swim in public pools ,children who attend day care ,homosexual male ,ingesting water or food Varity of domestic animals (cats ,dogs ,cattle ,beavers and deer)(9).National surveillance data for acute watery diarrhea in Haiti suggested that diarrhea is a common illness and

cause 5-16% of death among children(10).A major infant mortality occurred in brazil from diarrhea between 1970 and 1980 the rate is 100per 1000 birth(11). E.coli is indicator unsafe water or fecal pollution enteric disease including ;hemorrhage colitis, hemolytic uremic and infantile diarrhea(12). Almost 50% of patient with traveler's diarrhea it cause by E.coli there are six main virulence type of E.coli each type combines bacterium to the cell and adverse effect either by elaboration of toxin or some direct action (13). Another study in Tanzania where collected(451) stool specimens from children less than 5 year age with acute diarrhea divided into (348)from dry season and(103)from rainy season overall E.coli (37.7%)G.lambilia (24%) shigilla (14%) and retrovirus (23%)(14).In southeast Asia and Africa diarrhea is responsible for as much as (8.5%)and (7.7%) of all death in south and center of Iraq for children under 5 year of age had more respectively(15).The mortality than double in north mortality rate had increase to 131death per 1000 live births which puts Iraq on the same plane as Haiti or Pakistan infant mortality rates were 108 death per 1000 live birth that means one in 10 children do not survive beyond their first birthday (16).In Iraq malnutrition rates are roughly double of those a year ago UNICEF roughly (70%)of children recently seen by Canadian medical term were suffering from diarrhea, cholera or typhoid(17).

Materials and methods

This study was carried out in health care center in Karbala during the period (2009-2011) total case (1626)suffering from diarrhea for four weeks or more were evaluated clinical history ,physical examination ,source of drinking water and we examined sample of water had taken from different sources include tap water ,river ,tank and mixed water(use all type) to determine the percentage of chlorine in it by [Diethyl paraphenylene Diamine (DPD)] Which is the quickest and simplest method for chlorine residual. Bacteriological studies culture of water samples were collected from different source .stool examination we used to isolated and examined directly fresh stool for detection microorganisms.

Results and discussion

All sample of water collected showed that tested were less concentration of chlorine than normal value (normal chlorine residual is 0.5-2.0 parts per million).the study showed the number of patients more in summer and winter than other season in all year for seasons summer the number of patient is (148,137,235)for year (2009,2010,2011)respectively and in winter (156,155,170) case for the same year table(1).Also the result showed that water of river is more contaminated water cause diarrhea table(1). Because the low chlorine or nil of all sample that lead to growth many microorganisms in water and cause diarrhea the disease has seasonal pattern and the case countered high number in summer and winter and this agree with other study indicated high relative humidity and high rainfall in rainy season activated microorganisms G.lambilia(18) while the presence of high environmental temperature associated with emergence of clinical E.coli(19). Rural areas depend on the river and tank more than tap water ,rural households primarily have flush toilets which are attached to sewage system and does not improved sanitation also do not care of personal hygiene and hand washing before and after eating and after using toilets(20) . Only few families of household add chlorine or boil water before drinking culture of water from different sources was showed approximately (95%)growth of E.coli colonies which is indicator of transmission of E.coli to[gastrointestinal tract(GIT)] (21).The second organism is G.lambilia (table2)also called G.intestinalis or G.duodenalis found on surface of water ,soil and food it cause giardiasis disease which consist about(60-90%)of illness(22).Giardia cyst can thrive in cold water for months it is protected by outer shell that allows it to survive outside the body for long time and make it tolerance to chlorine disinfection also in rural area water obtained from surface wells and river ,this water focally contaminated throughout the year and the level of pollution increased by starts start the rains therefore increase G.lambilia more prevalent in rainy season(23).While E.coli that produce heat stable toxin and resistant to multiple antimicrobial agent, the high level of contamination of food during summer case high diarrhea prevalence because high temperature caused high bacterial growth(24).The reservoir for E.coli is the intestine of warm blood animals both mammilla and birds

E.coli can also survive in environment(25). E.histolytica is a parasite also major problem in developing countries because of inadequate sanitation and contamination food and water and other organisms caused diarrhea(26).the study showed the number of patient in female more than male table(3).In rural area female traveling presented asocial barrier and physical barrier, the inhabitant of rural are predominantly conservative (27).Adolescent girls and young adult women are not expected to move freely also male child in this society is considered more valuable than female child, these cultural traits may explain the difference in attendance rate at clinic during infancy and in the rate of mortality data(28).Children who need more fluids in relation to body weight than older children and adult in the same time also weakened in immune system all this allows to entering amounts of E.coli and other microorganisms to GIT in children more than adults which leads to diarrhea in children younger than 7 years than in adults (29).

Table(1):The distribution of case according to types of drinking water, years and seasons.

years													Type of water
				2011				2010				2009	
Mean of season	mixed	tap	river	tank	mixed	tap	river	tank	mixed	tap	river	Tank	Seasons
43.33 A*	36	32	110	57	25	27	55	30	28	30	50	40	summer
19.16 B	18	14	37	20	15	12	23	18	12	10	31	20	autumn
40.80 A	32	28	68	42	32	30	63	30	26	30	60	40	winter
19.58 B	14	24	23	20	15	14	36	23	14	10	31	11	spring
22.25 C				21.75 C				48.91 A				29.25 B	Mean type of water
35.93 A					28.00 B				27.68 B				Mean of years

Table(2):The types of microorganisms appeared in general stool examination according to years.

Mean of bacteria	2011	2010	2009	Type of bacteria
231.00 A*	282	182	175	*E.coli*
165.67 B	248	108	141	*G.lambilia*
106.67 C	125	103	92	*E.histolytica*
56.67 D	77	58	35	*Monilia*
	183.00 A	112.75 B	110.75 B	Mean of years

Table(3):The distribution of case according to gender.

Type of gender			year
Mean infection of year	Female	Male	
221.5 B*	285	158	2009
225.5 B	240	211	2010
366.00 A	322	410	2011
	328.33 B	259.67 A	Mean infection of gender

*the different alphabets means significant statistically
-(P value ≤0.05).

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