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Study the Effects of Age and Gender of Children on Rotavirus Infection in Baghdad, Iraq.

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ABSTRACT

This paper aimed to declare the unexplained effects of age and gender on Rotavirus infection. One hundred diarrheal stool samples were collected from under five years children attended to Al-Mansor hospital for children/Baghdad, all samples were subjected to Anti Rotavirus antibody test(Rapid test). This study was revealed that the Rotavirus infection was more incidence in age group 6-12 months(36.3%) and the girls are more effected than the boys($P < 0.05$). Therefore, could said the girls with age between 6 to 12 months have been risky to getting this infection.

Keywords: Age groups, gender, Rotavirus, Rot virus rapid test.

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INTRODUCTION

Rotavirus is the most common cause of severe diarrhea among infants and young children [1], and it is one of several viruses that cause infections often called stomach flu, despite having no relation to influenza. It is a genus of double stranded RNA virus belong family Reoviridae. By the age of five, nearly every child over the world has been infected with rotavirus at least once [2], However, with each infection, immunity will develops and the subsequent infections being less severe [3], adults are rarely affected [4]. There are five species of this virus referred to as A, B, C, D, and E [5]. Rotavirus-A, is the most common, causes about 90% of infection in humans. The virus transmitted by the fecal-oral route. It infects and damages the cells that lining the small intestine and produces an enterotoxin which induces gastroenteritis leading to severe diarrhea and sometimes death. Although rotavirus is discovered in 1973 [6] and accounts for up to 50% of hospitalization for severe diarrhea in infants and children [7], its importance is still not widely known within the public health community particularly in developing countries [8]. In addition to its impact on human health, rotavirus infects animals, and is a pathogen of livestock [9]. Rotavirus is usually an easily managed disease of childhood, but worldwide more than a half million children under five years of age still die from rotavirus infection each year [10] and almost two million more become severely ill [8]. In the United States, before initiation of the rotavirus vaccination program, rotavirus caused about 2.7 million cases of gastroenteritis in children, almost 60,000 hospitalizations, and around 37 deaths each year [11]. Public health campaigns to combat rotavirus focus on providing oral rehydration therapy for infected children and vaccination to prevent the disease [12].

Rotavirus gastroenteritis is a mild to severe disease characterized by vomiting, watery diarrhea, and low grade fever. Once a child infected by the virus, there is an incubation period of about two days before symptoms appear. Symptoms often start with vomiting followed by four to eight days of profuse diarrhea. Dehydration is more common in rotavirus infection than in most of these caused by bacterial pathogen, and is the most common cause of death related to rotavirus infection [11].

Diagnosis of infection with rotavirus normally follows diagnosis of gastroenteritis as the cause of severe diarrhea. Most children admitted to hospital with gastroenteritis are tested for rotavirus A [13][14]. Specific diagnosis of infection with rotavirus A is made by finding the virus in the child's stool by enzyme immunoassay. There are several licensed test kits on the market which are sensitive, specific and detect all serotypes of rotavirus [15][16]. Other methods, electron microscopy and polyacrylamide gel electrophoresis, are used in research laboratories, and (RT-PCR) can detect and identify all species and serotypes of human Rotavirus [17].

MATERIALS AND METHODS

One hundred stool sample (watery diarrhea) were collected from under five years children referred to laboratory department at Al-Mansor hospital for children/Baghdad Medicine City, during period (1st. October 2014 and 1st. May 2015), this laboratory provides their services to millions of people living in Iraq annually. The selection of patients were achieved according to the clinical profile of rotavirus infection in children under five years that admitted with acute watery diarrhea and criteria suspecting the possibility of Rotavirus infection.

Screening method included Latex Test (Anti-rotavirus Antibody)(RANDOX®), were applied after preparation of samples within one week of onset of symptoms because of getting a high number of viral particles in the watery stool sample, while after eight days the number of viral particles excreted in feces drops significantly, making the sample less reactive.

All statistical analyses were performed via computer assisted by personal computer using SPSS. Version. 10 and Excel application for all statistics.

RESULTS

This study was included the investigation of one hundred diarrheal samples from children attended to Al-Mansor hospital for children, all samples were subjected to Anti-Rotavirus Antibody test (Rapid test) as a

screening test for the detection the existence of Rotavirus. Table-1 showed that thirty three percent of all collected samples have positive Rotavirus while sixty seven percentage of samples have not. Table-2 Figure.1 showed that Rotavirus was more existence in age group (6-12 months) where consisted 36.3%.

Table 1: Distribution of patients infected with Rotavirus according to Anti-Rotavirus Antibody test(Rapid test)

Diagnostic Methods		No. of patients	Percentage
Anti-Rotavirus Ab	Positive	33	33%
	Negative	67	67%
Total		100	100%

Statistically significance at P<0.05

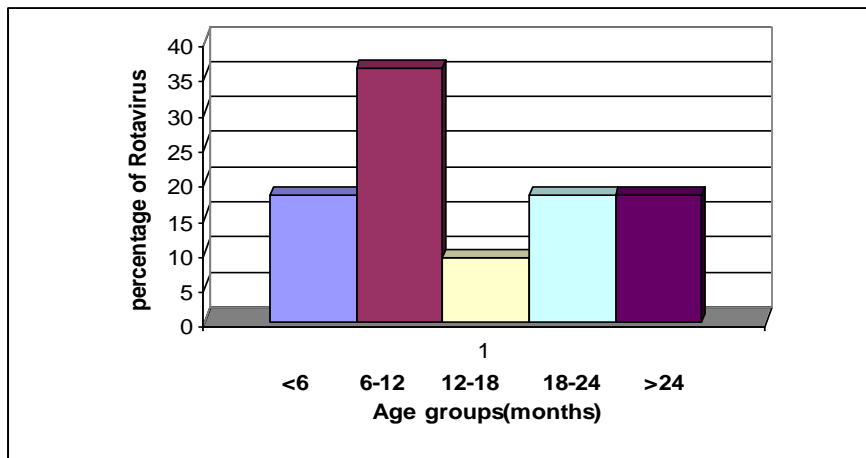


Figure 1: Histogram of distribution of Rotavirus infected patients according to their age groups.

Table 2: Distribution of patients infected with Rotavirus according to age groups (months)

Age group (Months)	Rotavirus infection		Comparison of Sig.	
	No.of patients	Percentage%	P-value	Sig.
<6	6	18.1	0.00	(P<0.05)
6-12	12	36.3		
12-18	3	9		
18-24	6	18.1		
>24	6	18		
Total	33	100		

Statistically significance at P<0.05

Table 3: Percentage of patients with symptomatic diarrhea and Anti-Rotavirus Antibody test according to gender

Gender	Percentage of patients with symptomatic diarrhea %	Percentage of patients with +ve anti-Rotavirus Ab test %
Male	44	30
Female	54	70
Significant Value	P>0.05 No Sig.	P<0.05 highly Sig.

Statistically significance at P<0.05

The patients belong age groups (1-6months), (18-24), and more than 24 months have equal results and effects and show that 18% for each of them.

Table-3 showed that the percentage of male suffering from diarrheal symptoms was (44%) while the female was (54%) ,thereby there is no significant differences between them, but the same table showed results that indicated clearly that the female (70%) were more risk than male (30%) to getting infection with rotavirus with highly significant differences between them, this state may be interpreted by present many an anatomical and physiological variations and differences between male and female which may be cause this state.

DISCUSSION

The current study included the investigation of one hundred diarrheal samples from children attended to Al-Mansor hospital for children, all samples were subjected to Anti-Rotavirus Antibody test (Rapid test) as a screening test for the detection the existence of Rotavirus. Table-1 showed that thirty three percent of all collected samples have positive Rotavirus while sixty seven percentage of samples have not. .Although overall these specimens taken from diarrhea suffered kids, but only 33% of them have positive Rotavirus test, this diarrheal stool may be caused by certain reasons other than Rotavirus such as bacteria, fungi, celiac disease, or even other viruses and to confirm this cases should be performed other examinations like general stool examination and culture to diagnose these microorganisms. The results presented in this study indicated that diarrheal stool in children must be examined firstly to Rotavirus due to the positivity of Anti-rotavirus Ab test was highly significant differences among diarrheal children[4].

Table-2 Figure-1 both showed that Rotavirus was more existence in age group (6-12 months) where consisted 36.3%, indicated that the age group between 6 months and 12 months may be high risk of getting infection with this virus, this status could explained by that children are more active and starting to walk, beside the dentation could cause low immunity of child at this period, thus, they has more chance to getting the infection, while the children below that age have a highly immunity again from their mothers. Specially Rotavirus–A can produces symptoms at first exposure, but the subsequent infections are typically asymptomatic [4], as the immune system provides some protection .Consequently ,symptomatic infection rates are highest in children under two years and decrease progressively towards years of age .

Infection in newborn although common is often associated with mild or asymptomatic disease , the most severe symptoms tend to occur in children six months to two years of age , the elderly and those with compromised or absent immune system function .Due to immunity acquired in childhood , most adults are not susceptible to rotavirus ;gastroenteritis in adults usually has a cause other than rotavirus , but asymptomatic infections in adults may maintain the transmission of infection in the community . Symptomatic reinfections are often due to a differences rotavirus -A serotype [10].

The patients belong age groups (1-6months), (18-24), and more than 24 months have equal results and effects and show that 18% for each of them.

Additionally, table-3 showed that the percentage of male suffering from diarrheal symptoms was (44%) while the female was (54%) ,thereby there is no significant differences between them, but the same table showed results that indicated clearly that the female (70%) were more risk than male (30%) to getting infection with rotavirus with highly significant differences between them, this state may be interpreted by present many an anatomical and physiological variations and differences between male and female which may be cause this state.

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