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A CASE STUDY TO FIND OUT THE PREVALENCE OF ANTI-HEV ANTIBODY AMONG CHILDREN OF PRIMARY SCHOOL

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Abstract:

HEV as we all know is an infectious disease and its factors include as that of acute hepatitis. It is a RNA virus and its way of transmission is fecal or oral route. Water source that is contaminated with Hepatitis E virus can cause its widespread mainly in tropical and subtropical areas, it is an endemic. It has been reported that there were around fifty outbreaks of this disease in central Asia, South East part of Asia, whole Africa and Mexico.

Hepatitis E virus should be considered as an acute hepatitis because its prevalence is high among children who go to primary school. The reason of it being highly prevalent is the lack of proper sanitation system in Sialkot city. Therefore to prevent the endemic clean water sources and proper hygiene must be ensured.

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INTRODUCTION:

HEV as we all know is an infectious disease and its factors include as that of acute hepatitis. [1-3]. It is a RNA virus and its way of transmission is fecal or oral route. Water source that is contaminated with Hepatitis E virus can cause its widespread mainly in tropical and subtropical areas, it is an endemic. It has been reported that there were around fifty outbreaks of this disease in central Asia, South East part of Asia, whole Africa and Mexico. Throughout this distribution of disease we can see sporadic as well as endemic forms [2, 4]. Hepatitis E does not spread through person to person route.

It is a self-limiting disease and no chronic cases have been seen yet. People aging between 15 to 40 years are most vulnerable to this disease. Although this disease is widespread throughout the world but its prevalence is much less in areas of the country that are developed and much more in underdeveloped areas of the country. Apart from all of this we still don't have description of risk factors and features of Hepatitis E virus [1-5]. So the following research work was performed to find out the presence of anti-hepatitis E virus antibody in children who are getting the treatment in primary schools of Pakistan.

METHODOLOGY:

The aim of this research work which was carried out in children studying in primary schools of Sialkot, Pakistan was to find out the prevalence of Hepatitis E virus in them. We took consent from parents of all the students who were going to be a part of this research work. To proceed we used just one method and that was to collect blood samples of all the children and no additional method was used. For this research work we took a total of one hundred and eighty five children in which investigation for anti-Hepatitis E antibodies was carried out. Out of all these participants ninety four children were from city area and eighty five were from urban area. We then divided all the participants into two groups. One group had children of 7 years of age and the other group had children of 14 years of age.

Blood samples were collected from all the children and all these samples were stored at a temperature of minus seventy degrees centigrade before they were sent to the lab for further examination. We used the procedure enzyme immune-assay for anti-hepatitis E virus antibodies study. According to the guidelines given on the kit by the manufacturer we used ELISA as our method to run the test. To further find out what could be the risk factors among the participants we took their whole data information as well as their parents. This included their address, gender, socioeconomic conditions at home, address of their parent's job, and their qualification. For the analysis of information that was collected we used SPSS V 16. To further find out the correlation among variables we used Chi square test. 0.050 P value was considered significant.

RESULTS:

As mentioned earlier there were total of one hundred and eighty five children who were a part of this research work and they aged between 7-14 years. There was no history of icterus in these children. The children from urban areas had parents with low qualification and their socio-economic conditions were unsatisfactory as well as compared to those who lived in city area. Ten females and thirteen males came out positive for anti-Hepatitis E antibody out of ninety one participants. So the prevalence is 12.40% in them. The prevalence rate is 13.10% in rural and 11.70% in city areas.

There was a distinct difference in the positivity rate. Among the group that was aged 7 years of age the rate of prevalence was 19.50% and those that were aged 14 years the rate of prevalence was 6.60% in rural areas. While the prevalence rate was 16.60% in group aged 7 years and 6.50% in those aged 14 years in city area. Positivity rate of anti-Hepatitis E antibodies was 18.10% (n: 17) in Group of 7-year age children and 6.60% (n: 6) in the group of 14 year of age children. The distinct difference among positivity rates can clearly be seen. Table-1 shows prevalence of antibodies for Hepatitis E among participants from Sialkot school by age and living area. From these studies we found no relationship whatsoever between anti-Hepatitis E antibodies and socioeconomic life, age, sex and qualification of parents. The children aged 7 years had more prevalence of HEV as compared to children aged 14 years.

Table-1 : Age Seroprevalence of Anti-HEV Ab in Both Areas

Age groups		7 years	14 years	Total
Rural Areas	Tested (n)	47.0	44.0	91.0
	Positive	8.0	4.0	12.0
	Positive %	20.50	7.60	13.10
Urban areas	Tested (n)	49.0	45.0	94.0
	Positive	7.0	11.0	11.0
	Positive %	17.60	6.50	11.70
Total	Tested (n)	93.0	92.0	185.0
	Positive	16.0	7.0	23.0
	Positive %	16.10	4.60	12.40

DISCUSSION:

In the underdeveloped countries the main cause of acute hepatitis is HEV [6]. The most common cause of HEV widespread is contaminated water sources [2]. In a region where supply of water is reduced and the population density is high and the sanitation system is unhygienic the magnitude of spread of HEV is high. Sewerage water has more HEV [2]. Healthy people have high prevalence of anti-Hepatitis C in them. The occurrence of disease in the endemic regions of Asia & Africa is much high in comparison with the regions which are non-endemic.

Hepatitis C was found in 5.0% children of age more than 10 years and 40% in people having age more than 25 years [7, 8]. Hence we can say children have high ratio of this disease [8]. This also concludes that age group of 15-39 years catch the disease more than those below 14 years of age [9]. Hepatitis E is the leading culprit of sporadic hepatitis infection in children of rural areas belonging to Sudan, Somalia and India. [10-15]. Children of less than five years of age from India were found to have anti hepatitis E antibodies in them according to a research work [16]. There were many researches that were carried out in Pakistan and according to them anti hepatitis E virus was 3-29% [17]. In Turkey children aged 6 months to 15 years had prevalence of 2.10% [18]. No antibody was found in children of primary school in Colak [19]

Anti- Hepatitis E antibodies IgG titers are at their highest at 28 days of infection and fall down really fast [9, 21]. Just because the disease is highly prevalent we can say that antibodies level decrease with time [8, 9, 22].

CONCLUSION:

Hepatitis E virus should be considered as an acute hepatitis because its prevalence is high among children who go to primary school. The reason of it being highly prevalent is the lack of proper sanitation system in Sialkot city. Therefore to prevent the endemic clean water sources and proper hygiene must be ensured.

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