Available online at www.medicinescince.org

ORIGINAL RESEARCH

Medicine Science 2017;6(2):233-5

Medicine Science International Medical Journal

Seroprevalence of Hepatitis A Virus in Inonu University Medical Faculty Hospital, 2015

Yucel Duman, Mehmet Sait Tekerekoglu, Selma Ay, Ayfer Serindag

Inonu University Medical Faculty Department of Medical Microbiology, Malatya, Turkey

Central Laboratory of Turgut Özal Medical Center, Malatya, Turkey

Received 01 August 2016; Accepted 01 Novenber 2016
Available online 23.11.2016 with doi: 10.5455/medscience.2016.05.8545

Abstract

Hepatitis A is the most common pathogen that causes acute viral hepatitis in humans. HAV infection is considered as an important public health concern. The aim of this study was to assess the seroprevalence of anti-HAV IgG and IgM antibodies in our hospital. The presence of anti-HAV IgG and IgM antibodies were evaluated retrospectively from 7275 serum samples which sent to our hospitals' microbiology laboratory in 2015. The presence of anti-HAV IgG and IgM antibodies in serum samples were studied by using macro ELISA Abbott - Architect i2000 system test kits. The 7275 patients' serum samples were analyzed. The 74.4% of analyzed samples were positive for anti-HAV IgG antibodies. Anti-HAV IgM antibody positivity rate was found as 1.3%. The 87.4% of anti-HAV IgM positive cases were under the age of 16 and 12.6% were at adulthood stage. The incidence of acute viral hepatitis disease could be reduced by improving hygiene conditions, personal hygiene education, routine vaccination activities, correcting infrastructure and informing people about HAV. We believe that; the data contributes to evaluate the preventive measures, immunization program studies and determination of vaccine efficacy studies.

Keywords: Hepatitis A, seroprevalence, anti-HAV IgG

Introduction

Hepatitis A virus (HAV) is a non-enveloped RNA virus that belongs to the Picornaviridae family and to the Hepatovirus genus. HAV remains a public health concern worldwide contributing to significant morbidity in developed and developing countries. It causes liver infections. HAV infections, account for an estimated 1.4 million worldwide cases annually [1]. The spread route for HAV is fecal-oral. HAV risk factors are travelling to endemic areas, near contact with an infected person, homosexual activity, food or water contaminated with feces waterborne, being in a daycare center and injection drug use. Today, despite all the advances in hygiene conditions and supply to transport clean water, HAV infections still remain important among transmitted diseases [1,2].

Hepatitis A is a self-limiting disease and does not cause chronic infections. HAV gives clinical symptoms in more than 80% of infected adults. But in childhood, HAV infections usually course subclinical, anicteric and without definable symptoms. So that, detection and diagnosis of these cases are usually difficult [1,3]. Thus, undiagnosed patients and lack of notifications leads to difficulties in determining the true incidence of the disease [1,2,4].

The serological diagnosis of the disease is based on the detection of anti-HAV IgG and IgM antibodies. The best indicator of acute HAV infection is the detection of anti-HAV IgM antibodies serologically by ELISA. Anti-HAV IgM antibodies indicate; being treated or recently passed infections. Also detection of four-fold increase in titer at 2 weeks of consecutive study in total anti-HAV antibodies is indicating acute infection. Anti-HAV IgG antibodies are being positive approximately about one week, after the onset of clinical signs; it can be detected positive for life [1,3].

In developing countries, infections due to hepatitis A are often seen in childhood. Approximately 40% of acute hepatitis is causing by HAV. However, if fulminan hepatitis develops due to HAV, high morbidity and mortality rates can be observed. In our country, the prevalence of HAV is determined among 8% to 88%. This difference of prevalence is due to age, socioeconomic status and geographic region. Determining the community prevalence, leads to order to take appropriate protective measures against the HAV [1,4].

It is very important to determine the seroprevalence of HAV in the community; because the data will help to

***Coresponding Author:** Yucel Duman, Inonu University Medical Faculty Department of Medical Microbiology, Malatya, Turkey

evaluate the preventive measures, immunization program studies and determination of vaccine efficacy studies. In this study we aimed to determine anti-HAV IgG and IgM antibodies against the hepatitis A virus to indicate the prevalence.

Materials and Methods

In our study, we analyzed the anti-HAV IgG and IgM antibodies results retrospectively which sent to Microbiology lab in 2015. The serum samples belongs to hepatitis A virus suspected cases. Afterwards, serum separated blood samples stored at -20 degrees until they analyzed. In these serum samples, the presence of anti-HAV IgG and IgM antibodies were studied by using; Abbott-Architect i2000 macro ELISA system test kits.

Results

In total, 7275 anti-HAV IgG and anti-HAV IgM were investigated in patients' serum samples retrospectively. In 74.4% of the samples, anti-HAV IgG positivity was detected. The anti-HAV IgM positivity rate was found as 1.3% [Table 1]. The 87.4% of anti-HAV IgM positive cases were under the age of 16, and 12.6% were adults.

Table 1: Anti-HAV IgG and Anti-HAV IgM positivity rates

	Positive (%)	Negative (%)	Total
Anti-HAV IgG	5413(%74,4)	1862(%25,6)	7275
Anti-HAV IgM	95(%1,3)	7180(%98,7)	7275

Discussion

Hepatitis A prevalence shows variety according to the socioeconomic status of countries and regions. In developed countries the disease is common in older ages, but in underdeveloped or developing countries the disease is started to be seen from early childhood [1, 4]. The lowest prevalence of HAV is seen in the Nordic countries in the world. In developed countries, the reduction of the prevalence of hepatitis A depends on; improved infrastructure, high-quality water supply, making the best of hand cleansing and destruction of human waste in a rational way. In underdeveloped and developing countries, HAV is still one of the most important health problems because of infrastructure and socio-cultural insufficiency [1, 3].

Hepatitis A infection leads to mild clinical symptoms in early ages; nevertheless in elderly ages it leads to more severe clinical signs. Hepatitis A is endemic in developing countries (76.2% in Senegal, 88.7% in Taiwan, 95.3% in Israel) [4]. In endemic countries, children are infecting under five years age and usually spend asymptomatic infection. In Japan, Austria and some of the European countries HAV is low endemic [12]. Over the years, improvement of the socioeconomic status of the countries, increase of parents' education level, decrease in the number of family population, improvement of hygiene and sanitation will cause to decrease of HAV incidence in childhood. Also it leads to increase in the number of sensitive people in adulthood [5]. Thus, in adulthood; exposure to HAV and the likelihood of complications will increase [1,5]. Looking at the data over the years; among five and nine years age of HAV prevalence found 30% in 1980s and it fell into 2% in the year 2000, in Greece, likewise in France 50% positivity in 1980 fall to 25% in 1990 [12]. Hepatitis A may lead to rarely fulminan hepatic failure and it may cause 0.01–0.02% death [2, 3].

The studies performed in our country show that in 0–10 age group IgG positivity reported to be less than 40%, and over 15 years of age as 90%, as in the developing countries [6–8]. The most important reasons for the low HAV rate during childhood in our country are the improvement of urban sewage, disinfection of potable water, controls on the waste disposal waters and reintegration of hand washing habits [4, 7]. World Health Organization recommends to apply the hepatitis A vaccine, in areas where the disease remained a serious increase in the sensitive adult group [3]. Hepatitis A vaccine has located in the routine immunization program in the United States since 2006, in our country since 2012. [9]. We believe that; implementation of routine vaccination schedule of hepatitis A vaccine will prevent spread of the virus, and protect the unvaccinated people and contribute to the social immunity.

Our country is considered as moderate endemic region for HAV infections, but it can also show differences according to geographic region and socioeconomic status [5,8]. Various studies conducted in Turkey by considering all age groups; prevalence range has changed between 8–80%, especially in the eastern and southeastern provinces prevalence is higher than reported [10,11]**.** A Multicenter study in our country has showed that in children aged less than ten years old, prevalence of HAV fall to 50%. Also It is reported that after the age fifteen it rises to 90% [12]. Tosun et al. in their study reported as in 2009 that; encounter with HAV increases with age, and the positivity rate is 74%. Additionally, it is reported that, in 10–14 age group HAV antibodies positive and negative cases come to equal status, while less than ten years old age group significantly increased the HAV antibody negativity [13]. Also they conducted in a study in 2012 that, anti-HAV IgG positivity were found as 91% in all age groups. However, in the same study, they found higher HAV antibody negativity under the age of 20, so that they concluded that there is a shift to older ages encounter with HAV in our country [14]. Temiz et al. [15] reported that anti-HAV IgG antibodies positivity was 97% and the rate of anti-HAV IgM positivity was higher in the 0-10 age group than the adult age group. Positivity rates of anti-HAV IgG antibodies in various studies conducted in our country were reported as; Kumbasar et al.[16] 85%, Cetinkol et al.[17]

58% Hacimustafaoglu et al.[18] 62%, Yavrucu et al.[10] 33% Yapicioglu et al.[5] 44%. In a study conducted by Atabek et al.[19] in Konya; anti-HAV IgG antibody positivity was found in rural areas as 68% and in urban areas as 26%. Yanik et al.[20] detected 1%, Parlak et al. [21] detected 3% Koroglu et al.[22] detected 4.4% and Suzuk et al.[23] detected 7.3% of HAV IgM antibodies positivity. It is reported that; the majority of these patients were in childhood age group. In our study when taken all age groups, the anti-HAV IgG antibody positivity rate of was found as 74.4% and IgM anti-HAV antibody positivity rate was found as 1.3%.

Conclusion

As a result; hepatitis A is still an important public health problem in our region. In this context, we think that, acute viral hepatitis A disease incidence can be reduced by; performing routine immunization, improving the hygiene conditions, improving infrastructure, gaining the personal hygiene by education, prevention the food, water and environmental contamination by the virus and informing people about this significance**.**

References

1. Yoldaş Ö, Bulut A, Altındiş M. Hepatit A Enfeksiyonlarına Güncel Yaklaşım. Viral Hepatitis J. 2012;18(3):81–6.
2. Mıstık R. Viral Hepatitler. Ed. Altındiş M. Hemşireler için mikrobiyoloji. İstanbul, Nobel Medical Bookstores, 2010;268–9.
3. Hepatitis A. http://www.who.int/mediacentre/factsheets/fs328/en/ access date 19.04.2015
4. Kara Hİ. Acute viral hepatitis A. Turkish Family Med J. 2007;11(4):177–84.
5. Yapıcıoğlu H, Alhan E, Yıldızdaş D, Yaman A, Bozdeir N. Prevalence of hepatitis A in children and adolescents in Adana, Turkey. Indian Pediatr. 2002;39(10):936–41.
6. Türker T, Babayiğit MA, Tekbaş ÖF, Oğur R, Avcı Yİ, Pahsa A, Hasde M. GATA Eğitim ve Araştırma Hastanesi'ne 2002–2004 yılları arasında viral hepatit nedenli yatışların sıklığı ve dağılımı. Gülhane Med J. 2006;48(3):125–31.
7. Ceyhan MN. Ankara'da bir ilköğretim okulunda hepatit A seropozitiflik prevalansı ve etkileyen etmenler ile bir yıllık insidansı (Thesis). Ankara: Gazi University Medicine Faculty, Department of Public Health, 2007.
8. Arslan K. Çocukluk çağı hepatit A seroprevalansı (Thesis). İstanbul: T.C. Sağlık Bakanlığı, Haseki Training and Research Hospital, Department of Child Health and Diseases, 2006.
9. Turhan V. Ulusal Aşılama Programında Olmayan Aşılara EHKM Gözüyle Bakış; Hepatit A Aşısı. 4.EKMUD Kongre Kitabı. İstanbul, 9-12 Mayıs 2012;84–5.
10. Yavrucu S, Yücel O, Sahin R. 2–14 yas arası çocuklarda hepatit A prevalansı ve sosyoekonomik dağılımı. Taksim Training and Research Hosp Med J. 2001;31(3):50–3.
11. Tekay F. Hakkâri Devlet Hastanesine Başvuran 0–14 Yaş Grubu Çocuklarda Hepatit A Sıklığı. Dicle Med J. 2006;33(4):245–7.
12. Badur S. Viral Hepatit Aşılarında Neredeyiz? XXXIV. Türk Mikrobiyoloji Kongre Kitabı. Girne, 7–11 Kasım 2010;35–8.
13. Tosun S, Ayaz H, Deveci S, Aksu S. Çocuk ve Erişkinlerde Hepatit A Virüsü ile Karşılaşma Durumunun Değerlendirilmesi. X.Ulusal Viral Hepatit Kongre Kitabı. Antalya, 01–04 Nisan 2010;121.
14. Tosun S, Yıldız O, Tekinkoruk S ve ark. Kronik HBV ve HCV Olgularının HAV ile Karşılaşma Durumlarını Yeterince Değerlendiriyor muyuz? XI. Ulusal Viral Hepatit Kongre Kitabı. Antalya, 12–15 Nisan 2012;80–1.
15. Temiz H, Özbek E, Toprak SF ve ark. Güneydoğu Anadolu'da bir Eğitim ve Araştırma hastanesine başvuran hastalarda hepatit A seroprevalansı. Dicle Tıp Derg. 2015;42(4):485–9.
16. Kumbasar H, Tabak F, Özaras R ve ark. Kronik Hepatitli Hastalarda Hepatit A Virüsü Seroprevalansı. Viral Hepatitis J. 2004;9(3):152–5.
17. Çetinkol Y, Yıldırım AA. Ünye Devlet Hastanesine Başvuran Hastalarda Hepatit A Seroprevalansı. Kocatepe Med J. 2011;12(1):18–22.
18. Hacımustafaoglu M, Sadıkoglu G, Özakın C. Bursa'da Çocuklarda Hepatit A Prevalansı. Bursa State Hospital Bült. 1999;15(2)147–51.
19. Atabek ME, Fındık D, Gulyuz A. Prevalence of anti-HAV and anti-HEV 70 antibodies in Konya, Turkey. Health Policy. 2004;67(3):265–9.
20. Yanık K, Akbal AU, Erdil M. Samsun yöresinde Hepatit A prevalansının değerlendirilmesi. Viral Hepatitis J. 2015;21:23-7.
21. Parlak M, Güven A, Erdin BN, Bayram Y. Bir Eğitim ve Araştırma Hastanesine Başvuran Çocuk ve Erişkin Yaş Gruplarında Hepatit A Virüs Seroprevalansı. Viral Hepatitis J. 2015;21:20-2.
22. Köroğlu M, Demiray T, Terzi HA, Altındiş M. Farklı yaş gruplarında Hepatit A Seroprevalansı; Sakarya verileri ve literatür derlemesi. Viral Hepatitis J. 2014;20:110-4.
23. Süzük S, Avcıküçük H, Öztaş D. 2006-2013 yılları arasında Kırıkkale ilinde 0-18 yaş grubunda akut Hepatit A Enfeksiyonu sıklığı. Viral Hepatitis J. 2014;20:106-9.