



High prevalence and risk factors of hepatitis B, C and E infections among Middle Eastern countries

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Abstract

Hepatitis agents infect the liver through fecal oral (hepatitis A) or blood and other body secretions (hepatitis B and C). The aim of this systematic review was the determination of status and risk factors of hepatitis agents among Middle East countries. For this systematic review, the terms “transmission route”, “prevalence/rate”, “Middle East”, “North Africa”, “Hepatitis B” and “Hepatitis C” were searched from motor engines of Google Scholar, PubMed, Science Direct, Scopus and SciVerse. Exclusion criteria were “migrants to the region” and “healthy carriers”. The results showed that the presence of hepatitis B and C viruses in poor and populated areas, mostly in North Africa. Hepatitis B, as the most common infectious disease in the world, especially in Africa was found with a high endemic status except for Tunisia and Morocco. Moreover, it was demonstrated that Palestine, Yemen, Egypt, Oman, Jordan, and Saudi Arabia have high hepatitis B endemic features. The prevalence of HCV has been reported as high in 12 MENA countries in 2010. Hepatitis E was determined to be in a high prevalence among countries of the region. The results showed that the presence of hepatitis B and C viruses in poor and more populated areas, mostly in North Africa is very high. Hepatitis A was found at a very high rate among young children in several countries in this region. Hepatitis B, as the most common infectious disease in the world, especially in Africa was found with a high endemic status except for Tunisia and Morocco. Moreover, it was demonstrated that Palestine, Yemen, Egypt, Oman, Jordan, and Saudi Arabia have high hepatitis B endemicity. The prevalence of hepatitis C virus (HCV) has been reported as high in 12 MENA countries in 2010. Hepatitis E was determined to be in a high prevalence among countries of the region.

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Introduction

Hepatitis agents infect the liver through fecal oral (hepatitis A) or blood and other body secretions (hepatitis B and C). The aim of this systematic review was the determination of status and risk factors of hepatitis agents among Middle East countries.

Materials and Methods

For this mini-review, the terms “transmission route”, “prevalence/rate”, “Middle East”, “North Africa”, “Hepatitis B” and “Hepatitis C” were searched from motor engines of Google Scholar, PubMed, Science Direct, Scopus and SciVerse. Exclusion criteria were “migrants to the region” and “healthy carriers”.

Hepatitis B

Hepatitis B virus (HBV) is an enveloped DNA virus that replicates in hepatic cells (1). Approximately 2 billion people in 2000 were infected and 350 million were carriers with the emerging HBV, making it the most

Key point

The results showed that the presence of hepatitis A, B and C viruses in poor and more populated areas, mostly in North Africa is very high. Hepatitis A was found at a very high rate among young children in several countries in this region. Hepatitis B, as the most common infectious disease in the world, especially in Africa was found with a high endemic status except for Tunisia and Morocco. Moreover, it was demonstrated that Palestine, Yemen, Egypt, Oman, Jordan, and Saudi Arabia have high hepatitis B endemicity.

common infectious disease in the world, especially in Africa with a high endemic status except for Tunisia and Morocco (2,3). In the Middle East, Iran, Bahrain and Kuwait are areas of low endemicity, Iraq, Cyprus and the United Arab Emirates have intermediate endemicity, and Palestine, Yemen, Egypt, Oman, Jordan, and Saudi Arabia have high endemicity. Most countries in Africa have high endemicity for HBV,

with the exceptions of Morocco and Tunisia, which have intermediate endemicity. Although vaccination has reduced the rate of the disease (2). The disease can culminate in acute and chronic liver diseases including cirrhosis and hepatocellular carcinoma (HCC). The serotypes ayw2, ayw3 with genotype D are present in the Middle East, although serotypes are highly endemic in Africa (4). An infection source, a susceptible host, and an established route of infection confer the pathogenesis of HBV. The symptoms of disease are jaundice, extreme fatigue, nausea, vomiting, and stomach pain. In later years, chronic cases might even cause liver cancer and liver failure. In the Middle East, the vaccination programs fulfillments have shifted the diseases pattern to intermediate and even to low prevalence (2). In Acar's study among blood donors, 2.55% were seropositive for HBV in Turkey (5).

Hepatitis C

Hepatitis C (HCV) virus is an RNA virus that infects the hepatic cells (6). The infection is an emerging disease that remains more problematic in some Asian and African countries than other areas of the world. The infection mostly develops as a chronic course (75%-80%) or might lead to cirrhosis of the liver and hepatocellular carcinoma (HCC), both of which outcome is death (7). The main route of transmission is via parenteral injections and needle sharing. Thus, investigation of injection drug users (IDUs) is important for the determination of epidemics in this region. The prevalence of HCV has been reported as high in 12 MENA countries in 2010. The seroprevalence of HCV among blood donors in Turkey was 1.5% in 5 areas of the country (8). In 2006, WHO estimated at least 21.3 million hepatitis C virus (HCV) carriers in the Eastern Mediterranean countries, with genotypes 4, genotype 1a or 1b predominating in Arab and non-Arab countries, respectively. Genotypes 1a and 1b are the most prevalent types in Jordan and Turkey, respectively. Moreover, genotypes 1b (in Tunisia and Morocco), 1, 4 (Nigeria) are predominant in North Africa (9). It has recently estimated that PWID people in the MENA are considerably higher than the global figures with over a half of million cases, from whom a half are infected (10).

Hepatitis E

Hepatitis E virus a is a non-enveloped and positive-sense, single-stranded ribonucleic acid (RNA) virus and transmission as a zoonotic disease has been shown (11). The mortality rate of the disease is 1%-4% compared to HAV being 0.1%-2% (12). WHO estimated those 20 million hepatitis E infections every year and over 3 million symptomatic infections of hepatitis E and also 56 600 hepatitis E resulting deaths worldwide. Among Iranian cities, the seroprevalence of the disease have been reported as 9.3% among 304 inhabitants in Nahavand rural regions (13), 7.4% (24/324) in Tabriz (14), 11.5% (46/400) in Khuzestan (15), 1.1% (9/800) of soldiers (16), 7.8% in Tabriz (17), 3.8% among 816 subjects in Isfahan (18),

9.3% in Tehran (19), 1.2% (3/255) in Sari (20), 19.7% of control and 27.5% of patients in East Azerbaijan (21) and 7% (3/43) in Jahrom city (22). The disease was endemic in two areas of Riyadh and Gizan in Saudi Arabia and males have been in exposure of HEV more than females (23). Moreover, in Saudi Arabia the prevalence of anti-HEV was as following; among healthy controls and patients were 0.3% and 4.8%, respectively (24). In another study, the rate of anti-HEV in multiple transfused patients (13 of 145) was significantly higher than controls (two of 250) (25). In the UAE, of 469 mothers, 93 (20%) were positive for anti-HEV and 28 (30%) of them were HEV-RNA positive (26). In Pakistan, three (3%) of hospitalized patients had acute HEV (high titers of anti-HEV IgG without IgM) (27). In 2010, the prevalence of HEV antibody was 10% among participants in Yemen (28). The rate of anti-HEV IgM was 19.4% among blood donors in Iraq and anti-HEV IgG was 20.3% (29). Moreover, of 270 analyzed serum specimens in Al-Sadr city – Baghdad, the rate of hepatitis E virus was detected in 58 (21.48%) of them and the prevalence of HEV Ab was significantly higher among cleaning workers than blood donors (30). In Egypt, among 200 Cairo horse workers, the presence of IgG anti-HEV antibody was detected as 13% (31).

Conclusion

The results showed that the presence of hepatitis A, B and C viruses in poor and more populated areas, mostly in North Africa is very high. Hepatitis A was found at a very high rate among young children in several countries in this region. Hepatitis B, as the most common infectious disease in the world, especially in Africa was found with a high endemic status except for Tunisia and Morocco. Moreover, it was demonstrated that Palestine, Yemen, Egypt, Oman, Jordan, and Saudi Arabia have high hepatitis B endemicity. The prevalence of HCV has been reported as high in 12 MENA countries in 2010. Hepatitis E was determined to be in a high prevalence among countries of the region.

Authors' contribution

All authors drafted the first version. FN, AG, Shahab Fallahi and SA edited the first draft. All authors reviewed, commented and approved the final draft.

Conflicts of interest

The authors declare no conflict of interest.

Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors.

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