# Epidemiology of Hepatitis B and C in Al-Muthanna Province

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## Abstract

This study systematically reviewed and synthesized available records of hepatitis B and C prevalence in Al-Muthanna province through the last five years from early 2014 till the end of 2018 in Women and Children Teaching Hospital at Al-Muthanna province. The study recorded high prevalence of hepatitis virus at this region, most of the patient were females and HCV was the most prevalent between them, the year of 2016 recorded the highest infection rate. **Conclusion:** High rate of Hepatitis C virus infection among of thalassemia patients

***Keywords:*** *hepatitis , blood donor, thalassemia*

## Introduction

Hepatitis is an inflammation of the liver, most commonly caused by a viral infection. There are 5 main hepatitis viruses, referred to as types A, B, C, D and E. These five types are of greatest concern because of the burden of illness and death they cause and the potential for outbreaks and epidemic spread. In particular, types B and C lead to chronic disease in hundreds of millions of people and, together, are the most common cause of liver cirrhosis and cancer. Hepatitis A and E are typically caused by ingestion of contaminated food or water. Hepatitis B, C and D usually occur as a result of parental contact with infected body fluids. Common modes of transmission for these viruses include receipt of contaminated blood or blood products, invasive medical procedures using contaminated equipment and for hepatitis B transmission from mother to baby at birth, from family member to child, and also by sexual contact [(1)].

The most common diseases that are transmitted through blood are hepatitis B and hepatitis C viruses [(2)] . Infections with hepatitis B virus (HBV) and hepatitis C virus (HCV) are a worldwide public health problem. In Iraq, viral hepatitis prevention and control program was started during early seventies [(3)].

The transmission of HCV is primarily through exposure to infected blood. Risks for transmission include blood transfusion before 1992, intravenous drug use, high risk sexual activity, solid organ transplantation from an infected donor, occupational exposure, hemodialysis, household exposure, birth to an infected mother, and intranasal cocaine use [(4)].

## Review

### Hepatitis B and C

Hepatitis B virus is a member of the Hepadnavirus family [(5)]. The virus particle, called Dane particle [(6)] (virion), consists of an outer lipid envelope and an icosahedral nucleocapsid core composed of protein. The nucleocapsid encloses the viral DNA and a DNA polymerase that has reverse transcriptase activity similar to retroviruses [(7)].

Viral infection by hepatitis B virus (HBV) causes many hepatocyte changes due to the direct action of a protein encoded by the virus, HBx, and to indirect changes due to a large increase in intracellular reactive oxygen species (ROS) after infection. HBx appears to dysregulate a number of cellular pathways. HBx causes dysregulation in part by binding to genomic DNA, changing expression patterns of miRNAs, affecting histone methyl transferases, binding to SIRT1 protein to activate transcription, and cooperating with histone methylases and demethylases to change cell expression patterns [(8)].

HBx is partly responsible for the approximate 10,000-fold increase in intracellular ROS upon chronic HBV infection [(9)]. Increased ROS can be caused, in part, by localization of HBx to the mitochondria where HBx decreases the mitochondrial membrane potential, in addition, another HBV protein, HBsAg, also increases

ROS through interactions with the endoplasmic reticulum [10].

Hepatitis C (originally "non-A non-B hepatitis") is caused by hepatitis C virus (HCV), an RNA virus of the family Flaviviridae. HCV can be transmitted through contact with blood (including through sexual contact if the two parties' blood is mixed) and can also cross the placenta. Hepatitis C usually leads to chronic hepatitis, culminating in cirrhosis in some people. It usually remains asymptomatic for decades. Patients with hepatitis C are susceptible to severe hepatitis if they contract either hepatitis A or B, so all persons with hepatitis C should be immunized against hepatitis A and hepatitis B if they are not already immune, and avoid alcohol. HCV viral levels can be reduced to undetectable levels by a combination of interferon and the antiviral drug ribavirin. The genotype of the virus is the primary determinant of the rate of response to this treatment regimen, with genotype 1 being the most resistant. Hepatitis C is the most common chronic blood-borne infection in the United States [11].

## Material and Method

The results of the last five years were collected from (Al-Muthanna Women and Children Teaching Hospital) and organized in tables and charts based on gender, age, year of injury, accompanying diseases and residential areas.

## Results and Discussion

Thirty three cases were identified through the last five years 13 (39%) of them were infected with HBV and 20 (61%) were infected with HCV, this indicates that the type C was more prevalent during these years. 85% of infection were females as the results were collected from delivery hospital.

**Table (1): Distribution of HBV and HCV**

| Item | | NO. | % |
|---|---|---|---|
| IgG ELISA | HBV | 13 | 39% |
| | HCV | 20 | 61% |
| Age | ≥10 | 4 | 12.1% |
| | 11-20 | 8 | 24.2% |
| | 21-30 | 13 | 39.3% |
| | 31-40 | 8 | 24.2% |
| Genus | Male | 5 | 15% |
| | Female | 28 | 85% |
| Year of infection | 2014 | 11 | 33.3% |
| | 2015 | 0 | 0% |
| | 2016 | 12 | 36.3% |
| | 2017 | 6 | 18.1% |
| | 2018 | 4 | 12.1% |
| Region | Rural | 17 | 52% |
| | Urban | 16 | 48% |
| Accompanying disease | Thalassemia | 3 | 9% |
| Total | 33 | | 100% |

The age group (21-30) years was the most infected(39.3%) because it is the appropriate age for maturation and pregnancy and women are eligible for delivery in this age group, also the hospital was especially for women and children, while the age group (≥10) years recorded the lowest rate, the CDC also notes that infections are rising among women of childbearing age, while the virus is not always transmitted from a pregnant woman to her baby, it is possible: About 6 infants in 100 born to mothers with the virus are infected [12]. Most cases were rural areas (52%) due to the use of drug injection is common. The year of 2016 recorded the

highest infection rate (36.3%) comparing with the year of 2015 which recorded no infections.

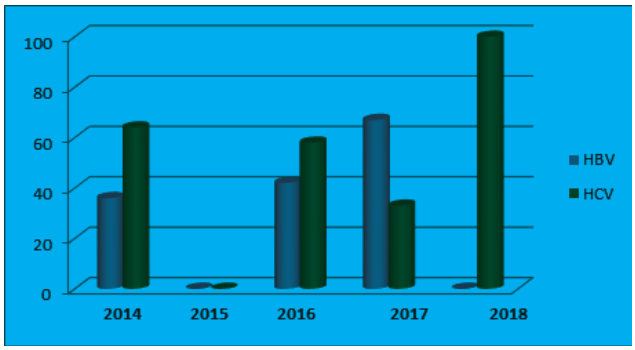


**Fig (1): Distribution of HBV and HCV according to years of diagnosis**

Three of the HCV cases had thalassemia as accompanying disease as hepatitis C virus (HCV) is the major cause of post-transfusion hepatitis infection (PTH). Patients with thalassemia major are at high risk of HCV(13).

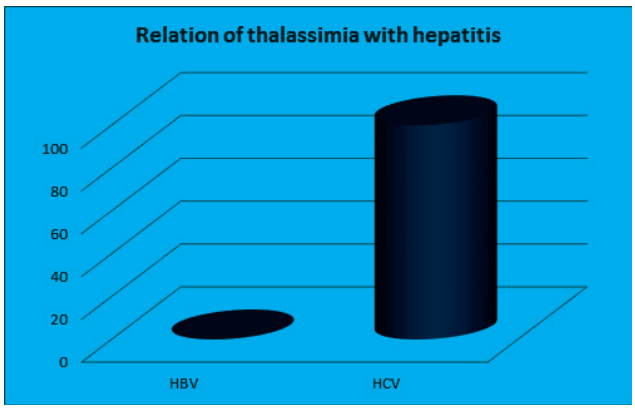


**Fig (2) : Relation of thalassemia with type of hepatitis**

**Ethical Clearance:** The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

**Conflict of Interest:** The authors declare that they have no conflict of interest.

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