

## RESEARCH ARTICLE

# HEPATITIS C VIRUS INFECTION AND TREATMENT: A MINI REVIEW

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### ARTICLE INFO

#### Article History:

Received 14<sup>th</sup>, July, 2015

Received in revised form 23<sup>th</sup>, July, 2015

Accepted 13<sup>th</sup>, August, 2015

Published online 28<sup>th</sup>, August, 2015

#### Key words:

1. HCV,
2. Genotype
3. PEG-Interferon
4. Ribavirin
5. Sustained virological response

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### INTRODUCTION

Hepatitis is an inflammation of the liver, a number of diseases they cause. Hepatitis C virus (HCV) is a virus that can cause infection of the liver, and scarring of the liver. The acute Hepatitis C is called as initial phase of the HCV infection. When the virus persists in the body for more than six months is known as the chronic hepatitis C. In some cases, this Hepatitis may lead to cirrhosis (it is a condition in which the liver cells are replaced by the scar tissue) which affects the liver functions [1] ability.

C virus an overall incidence of 3.3% of the population suffering. Statistically, as many people suffering with HCV as are with HIV. Without large scale efforts that contain the spread of HCV and the populations infected are treated, the death rate of Hepatitis C will exceed that of AIDS by the turn of the century and will only get worse.



**Fig: 2** World wide prevalence in Hepatitis C

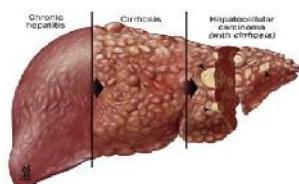
It is shown Hepatitis C virus, has a lowest in north European countries they including Germany, Great Britain and France. According to survey, the prevalence of HCV antibodies shows that blood donor's averages less than 1% for the region. The higher rates have been reported in Southeast Asian countries including Malaysia (2.3%), Philippines (2.3%) and the India (1.5%). The incidence in Japan was 1.2 %. The African

### Hepatitis

- Hepatitis is a general term referring to inflammation of the liver

- Causes:

- Infectious
  - Viral
  - Bacterial
  - Fungal
  - Parasitic
- Non infectious
  - Alcohol
  - Drugs
  - Autoimmune
  - Metabolic diseases



**Fig 1** Hepatitis C virus infected liver

### World Wide Prevalence

The hepatitis C virus studies suggest that 200 million people over the world are affected with Hepatitis C. With the Hepatitis

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nations, Egypt have been reported as reaching the high rates of 14.5% [2].

### **Genotypes**

The HCV genotypes are there in 11; that is 1-11, with many subtypes like a, b, c, and about 100 different strains; the sequence of the HCV genome based [3] on 1, 2, 3. Genotypes 1-3 are widely distributed world wide, the 60% of infections worldwide accounting for genotypes 1a and 1b. In the Middle East, Egypt and central Africa genotype 4 is characteristic. In South Africa genotype 5 is almost exclusively [4-5] found.

### **Epidemiology of HCV Genotypes Worldwide**

The most frequently encountered genotypes worldwide are [6-7] genotypes 1, 2, and 3. When the subtype distribution is investigated the significant differences are noticed. Genotype 1a is the most common subtype in the Northern Europe and North America followed by the 2b and [8-9] 3a. The genotype 1b is most common subtype in Southern and Eastern Europe followed by the genotypes 2 and 3. [10-11] Even though North America and Europe are relatively common in HCV subtypes 2a and 2b, In Northern Italy subtype 2c is found commonly.[12] In the South East Asia Subtype 3a, is endemic, [13] And intravenous drug abusers (IVDA) are having relatively high [14-15] frequency . The suggestion is lead to this subtype is originated from the South East Asia. In Tunisia, the dominant largely is subtype 1b in (79%) Subtypes are followed by 1a, 2a, 2b, 3a, and 4. [16] In the North Africa, Eastern and Southern Europe situation are similar; HCV subtype 1b seems to be most [17-18] prominent. In Morocco Tunisia [19-18] contrast to subtype 1b, even though the most prevalent, lower prevalence's had (47-48%) but the higher Circulation of genotype [18] is 2 (29-37%). The more common in HCV-infected people with genotypes 1, 2 and 3 in other parts of the world. in the Middle East Genotype 4 seems to be confined [20] and Central [21-22] Africa, almost exclusively in South Africa HCV genotype 5 has been isolated [23] where it predominates, followed by the genotypes 1, 2, 3, and 4, respectively. [24] In Hong Kong Genotype 6 has been isolated, Vietnam and throughout the South East [25-26] Asia.

It is interesting to be note that the Philippines, HCV Subtype distribution is similar to the North America, where as the most common in subtype 1a and Northern Europe also followed [27] by 1b, 2a and 2b.

### **Importance of Genotype Information**

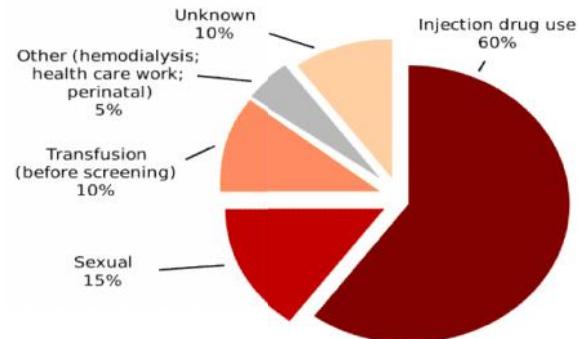
In hepatitis C virus the Genotype information is very important because it plays a role in HCV treatment. The duration of the treatment, Ribavarin dose and whether the protease inhibitor of HCV will be added to the pegylated interferon and Ribavarin combination therapy are also affected by the [28] genotype.

### **Symptoms**

The hepatitis C virus symptoms are mild and Flu- like symptoms. The acute Hepatitis C people do not show any signs

and symptoms. Usually appear the symptoms in within two weeks to six months after the [29] virus has been exposed.

### **Mode of Transmission**



**Fig 3** Mode of transmission of hepatitis C

The transmission of the HCV described in the literature is: organs, tissue, blood and blood products; unsafe medical procedures; exposure of healthcare e.g. needle stick injury [30]; intravenous drug use [31]; sexual transmission [32]; body piercings [33] and transmission of vertical [34].

In Africa, the blood is screened for HCV is only 19%. Restrictive the cost of laboratory tests [35] is main reason for low Screen rate. Also, incoherent screening procedures for blood donors make the blood transfusion it is major in developing of HCV infection. Who have received by multiple blood transfusions it is evidenced in patients with sickle cell (17%) [36] By high HCV prevalence. In the intravenous drug users reported developed in the prevalence of HCV world is as high as 80%, the prevalence of similar in the risk groups in Africa is known of the little [37]. there is a significant variation between the countries, WHO estimates that in the sub Saharan Africa, the injections are given with reused syringes are approximately 18% or unsterilized needles thus increasing the risk of transmission through practices unsafe injection [38].

### **Diagnosis**

The HCV test is recommended for the persons have the high risk of getting infected and patients with unexplained ALT levels are high [39]. The Highly sensitive and specifically rapid tests are available in diagnosis of HCV. In the using of blood HCV RNA can be detected amplification techniques they are polymerase chain reaction (PCR) and transcription-mediated amplification (TMA) [40]. Before initiating treatment the Quantitative HCV RNA should be determined. In monitoring success of HCV treatment HCV RNA is follow up useful [41]. Even though genotyping does not predict the outcome of infection [41-42-43], the predicting the treatment of likelihood response it is useful.

### **Recommended Treatment Regimens**

The hepatitis C virus is common in spontaneous resolution and is recommended in before initiation of therapy waiting for 2-4 months. the improved results are achieved with the addition of Ribavarin to PEG-IFN, the current therapy available for chronic HCV infection are effective in fewer than 50% of

patients with HCV genotype 1. In chronic HCV infection the new standard cares for the treatment of Used in Protease inhibitors (PI) combination with pegylated interferon and Ribavirin [44].

The objective of therapy is to eradicate the virus and potential complications prevent from chronic HCV infection. If early detected, chronic hepatitis progression is to severe liver disease are prevented in 54-63% of patients by antiviral treatment [42-45].

The Hepatitis C RNA viral load measuring by assessing the treatment of the efficacy. To achieve a Sustained Virological Response is the main goal (SVR), defined as the continued absence of hepatitis C RNA the completion of the therapy after 6 months [46-44]. The interferon monotherapy is evolved from Treatment for chronic HCV infection which results are SVR of 10 to 20% [47] to combination therapy of interferon plus Ribavarin, which is associated with nearly 40% of higher SVR rate [48-49].

The therapy duration of standard interferon plus Ribavirin has been based on the viral genotype and the viral load pre-treatment [50]. The patients with SVR rates infected with genotype 2 or 3 are same therapy for 24 and 48 weeks, in the longer course of therapy showing no benefits [41-51].

For patients are infected with genotype 1, the interferon plus Ribavirin therapy is recommended for 48 weeks those with a high viral load (>800,000 IU/ml) and patients with those with a low pre-treatment viral load for only 24 weeks of therapy [52-53].

## CONCLUSION

In many countries hepatitis C is still a neglected disease. Still, from the limited data presented, HCV is a major health problem there is no doubt that requires greater attention. In the Middle East HCV genotype 4 is the predominant genotype in 170 million HCV carriers live where one-fifth of the estimated. With effective therapies available against HCV, researchers, health care decision makers and physicians, diagnosis efforts are need to improve, in management of Africa and prevention of HCV. Efforts to more effective antiviral Therapies develop and for the near future remain the largest challenges for establishment of an effective HCV vaccine.

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**How to cite this article:**

E. Jeevitha et al., Hepatitis C Virus Infection And Treatment: A Mini Review. *International Journal of Recent Scientific Research Vol. 6, Issue, 8, pp.5933-5937, August, 2015*

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