

Jeevanrekha- Haryana Model for Treatment and Eliminating Hepatitis C

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Abstract: *Introduction:* The prevalence of chronic hepatitis C virus (HCV) infection has been estimated at between 1.2% and 1.7% in the adult global population whereas estimated figure in India is around 1% but there are no discrete studies for the same. The high cost and long waitlist in developed countries causes unnecessary delay but situation is totally reverse in Haryana, India where with efforts of government, treatment is free of cost to every resident and that too without any waiting period.

Review of Literature: HCV, a single stranded RNA can go into chronic phase in 85% of patients and rest can clear this virus on its own. The patients who develop Chronic hepatitis C, after a prolonged period of ten to twenty years can develop cirrhosis in 5-20 % of patients. Few years back, the treatment was given with simple Interferon, followed by Pegylated Interferon & Ribavirin for 24 -48 weeks but after availability of Directly acting antiviral agents (DAA'S), interferon free era of treatment has started since December, 2015 in India.

Summary and Conclusions: The main hindrance in treatment of chronic hepatitis C in developed countries is long waiting list and cost of therapy whereas in India, Haryana with help of Jeevan rekha Model, acts of commission has been removed and purchasing is done through open transparent tenders, thus free treatment to every resident has been made available to needy patients for controlling hepatitis C.

Keywords: Chronic hepatitis C, Sofosbuvir, Velpatasvir, Daclastavir, Jeevan rekha.

INTRODUCTION

The prevalence of chronic hepatitis C virus (HCV) infection has been estimated at between 1.2% and 1.7% in the adult global population [1]. In India, in absence of discrete studies, estimated prevalence rate of hepatitis C is 1%. There has been a policy shift in treatment of hepatitis C leading to early detection of cases and initiating them on treatment on priority, thus leading to successful cure of these patients which is in contrast to developed countries. The main reasons for delay in developed countries is high cost and long waitlist but situation is totally reverse in Haryana, India where free of cost of treatment is available to all the residents and that too without any waiting period. These two maneuvers are key to curbing the menace of this deadly disease.

PATHOPHYSIOLOGY

HCV, a single stranded RNA Virus during its life cycle starts with viral capsid gets attached to hepatocyte leading to endocytosis and after new viruses are formed, there occurs packaging and followed by fresh release, thus disease continues in the host [2]. In acute phase, patients will have symptoms of

generalized Myalgias, nausea, vomiting and upper abdominal discomfort due to mild enlargement of liver leading to stretching of capsule. The patients who develop Chronic hepatitis C, after a prolonged period of ten to twenty years can develop cirrhosis in 5-20 % of patients and around 25% of them can advance to End stage liver disease and hepatocellular carcinoma. HCV has around seven genotypes numbered as 1-7. In India, genotype 3 is more common in South India whereas Genotype 4 is common in North India. The initial test advised is antibodies to hepatitis C Virus (HCV) and if they are positive then it is confirmed with HCV RNA quantitative which is polymerase chain reaction test.

TREATMENT OVERVIEW

Few years back, the treatment was given with simple Interferon, followed by Pegylated Interferon & Ribavirin for 24-48 weeks but only 50%-70% of patients achieved sustained virological response and moreover had many unpleasant side effects like flu like symptoms, hemolytic anemia and mood alteration [3, 4]. In 2011, the availability of oral antiviral drugs like boceprevir and telaprevir was turning point in treatment of chronic hepatitis C and lead to increased sustained virological response when used in combination with Pegylated Interferon and Ribavirin [2]. Later on further change occurred in 2013 when simeprevir and sofosbuvir were approved. The availability of these oral

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agents lead to more than 90% of sustained virological response and had minimal side effects. Later on completely Interferon free regimen became reality after availability of more oral antiviral agents which were pangenotypically effective and even in cirrhotic patients.

COST OF PEGYLATED INTERFERON AND RIBAVARIN COMBINATION

Before December 2015, the only option available in India for treatment of chronic hepatitis C was combination of Pegylated Interferon and Ribavirin for 24-48 weeks, the cost of whole treatment was approximately was 6600 -13000 Dollars per patient for full course of treatment. The Haryana government launched Jeevanrekha program for controlling the epidemic of hepatitis C and Medical Gastroenterology department was made Nodal Center and Dr. Parveen Malhotra was made Principal Nodal officer of this center.

In this project to begin with people living Below poverty line were given totally free treatment and rest were treated at subsidized rate of 150-300 Dollars per patient for 24-48 weeks. The Haryana government proceeded with repeated open tender system which lead to gradual fall of treatment cost, thus more and more patients were enrolled on treatment who were in past were unable to bear the cost of treatment.

AVAILABILITY OF ORAL ANTIVIRALS IN INDIA

The major shift in treatment of hepatitis C in India occurred after December, 2015 when oral antiviral became available in India. These oral drugs had least of side effects and thus generated confidence even in those patients who have left treatment midway with Pegylated Interferon and Ribavirin. The reduced cost of therapy was another stimulant for initiation and successful completion of treatment in many patients.

SOFOSBUVIR AND LEDIPASVIR

The sofosbuvir 400 mg and Ledipasvir 90 mg combination (LVD/SOF), as a single-tablet formulation ushered in a new era for HCV treatment. Sofosbuvir should be used cautiously with rifampin, St. John's wort, amiodarone and in renal impairment. The Ledipasvir has minimal side effects like nausea, vomiting, headache & fatigue. The proton pump inhibitors and histamine-2 receptors antagonists reduce level of Ledipasvir, hence should be used cautiously with the same [5].

SOFOSBUVIR AND DACLASTAVIR COMBINATION

Daclatasvir 60 mg/sofosbuvir 400 mg for twelve weeks is recommended regimen for GT 1,2 and GT 3 treatment-naïve noncirrhotic patients, but is considered an alternative with or without RBV in those with compensated cirrhosis for 24 weeks. In decompensated cirrhotic, pangenotypically, this combination can be used for twelve to twenty four weeks with or without Ribavirin respectively [4, 6]. The cure of chronic hepatitis C lead to decrease in development of type-2 diabetes as well as reduction development of renal and cardiovascular complications in patients who have already develop diabetes [7, 8].

SOFOSBUVIR AND VELPATASVIR COMBINATION

The Chronic hepatitis C patients who are Cirrhotic are treated with Sofosbuvir and Velpatasvir combination for 12 weeks in compensated stage and for 24 weeks in decompensated cirrhotic. The above combination along with Ribavirin 800 mg-1200 mg is given for twenty four weeks in previous treatment failure patients.

HARYANA GOVERNMENT PIVOTAL ROLE IN INDIA

The Haryana government appreciated the widespread presence of this deadly disease in the state and thus chalked out strategy for which free treatment was given to below poverty line patients and at subsidized rates to other general category patients. Thus a dedicated Nodal center at PGIMS, Rohtak was started in 2013 and all those patients suspected to have this disease on presence of anti HCV antibody, were confirmed with HCV RNA quantitative and genotyping test, in addition to detailed clinical and biochemical tests.

Since January, 2017, under this project, totally free treatment to all residents of haryana including diagnostic tests like HCV RNA Quantitative & Genotype, Fibroscan, Endoscopy, and all other routine tests like Liver function tests, Renal function tests etc is being given. The haryana government bears a burden of 40 Dollars/ patient for 12 weeks for Sofosbuvir & Daclastavir Combination for non-cirrhotic and 120 Dollars/ patient for 12 weeks for Sofosbuvir & Velpatasvir Combination for cirrhotic but to patient it is totally free of cost, including other tests like Viral load, Endoscopy, Colonoscopy, Fibroscan etc. The present cost of treatment in United states of America for 12 weeks treatment is 84000 Dollars.

The Counseling service is integral part of treatment and significantly increases the compliance of patients on therapy. The patients are clearly explained in beginning about disease, its impact on body, side effects of drugs and precautions to be taken while on treatment and in future. The online system enables the progress and adherence of patients to be tracked from enrollment to therapy completion. Every patient is tracked during treatment course and thus leading to increased compliance.

The Structure of Jeevanrekha Project is on Spoke and Hub pattern whereby Medical Gastroenterology Department at PGIMS, Rohtak is Hub where all complicated Hepatitis C patients are treated whereas all District hospitals act as spokes and have a dedicated trained Nodal Officer where all uncomplicated, non-cirrhotic hepatitis C patients are treated, so that they have not to travel long distance from their native place, thus making treatment easily available, accessible leading to increase compliance rates. The National Viral Hepatitis Control Program (NVHCP) has imbibed the structure of Jeevan rekha Project as whole and making it as first state project to be adopted at National level. It clearly implies that a well planned and executed policy is beneficial not only to native state but for surrounding geographical areas also. Uptill now around twenty five thousand patients have been treated and results are excellent with SVR of more than 96%, mainly due to predominantly non-cirrhotic group, good compliance, less side effects, easy accessibility & no waiting list.

SUMMARY AND CONCLUSIONS

Much of the discussion about treatment for chronic hepatitis C is based on financial issues, given the large up-front prices in advanced countries but in contrast haryana in India with help of this Jeevanrekha model has benefited many needy patients and thus has become first place in world where free diagnostic and treatment has been given to its native. An efficient state project has become the backbone of National Viral Hepatitis Control Program.

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