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Virological Response with Pegylated Interferon and Ribavirin Combination Therapy in Iraqi Patients Infected with Chronic Active Hepatitis C Virus

Dr. Mustafa Ibrahim Munaty — M.B.Ch.B., F.l.C.M.S.
Ministry of Health, Baghdad Al-Russafa Health Directorate, Imam Ali Hospital, Baghdad, Iraq.
mostafamonty76@gmail.com

Dr. Salman Hussin Asst – M.B.Ch.B., D.H., F.I.B.M.S., IN PEDIATRIC F.I.B.M.S., IN PEDIATRIC NEPHROLOGY Ministry of Health, Baghdad Al-Russafa Health Directorate, Imam Ali Hospital, Baghdad, Iraq.
assisalman2@gmail.com

Dr. Ali Hasan Rashid - M.B.Ch.B., D.M., E.M.J.F.S., IN EMERGENCY MEDICINE

Ministry of Health, Baghdad Al-Russafa Health Directorate, Imam Ali Hospital, Baghdad, Iraq.

Annotation. Background: Hepatitis C is caused by infection with the hepatitis C virus. The hepatitis C virus is a single-stranded, enveloped, positive sense RNA virus.

The virus can infect the person and may cause severe inflammation of the liver, leading to severe liver damage and long-term complications.1 Objective: this study was to assess the virological responses for Iraqi patients infected with chronic active hepatitis C virus treated by combination therapy of pegylated interferon and ribavirin.

PATIENTS & METHODS: This is a retrospective cross-sectional study in which 487 (297 male and 190 female) patients with chronic active HCV infection was enrolled to the period between Ist of Dec. 2021 to 10" of Jan. 2022 from the GIT outpatient clinic of Baghdad teaching hospital. Data were collected from patients containing (name. age, gender, residency, occupation, date of diagnosis. family history, etc.). Investigations had been done to assess pretreatment conditions and post-treatment virological responses, including EVR, ETR, and SVR and drug side effects for all patients.

Results: Out of the 487 treated patients, 297 (61%) were male and 190 (39%) were female. The mean age was 37 years. 210 (43.1%) had genotype 1b, 170 (34.9%) had genotype-4, 58 (11.9%) had genotype-1a, 34 (7%) had genotype-3, and 15 (3.1%) had genotype-2. The overall SVR24 was (46%) and SVR for each genotype was as follows: Genotype la: 36.2% Genotype 1b: 39% Genotype 2: 66.7% Genotype 3: 67.6% Genotype 4:51.8%

Conclusion: The commonest HCV genotype in the present study is genotype 1b, followed by genotype four, then LA, and the overall SVR24 by PEGylated interferon alfa 2a/ribavirin combination treatment is 46% in the present study. The most responsive genotypes are genotypes 2 and 3, while the least responsive genotypes are genotypes la and 1b. The commonest side effects of PEGylated interferon alfa 2a / ribavirin combination treatment are arthralgia, fatigability, fever, and flu-like illness. Persistent blood count.

Keywords: Interferon, ribavirin, virological, PEGylated, fatigability, genotype, hepatitis C virus

Introduction

Around 170 million people worldwide are infected with the hepatitis C virus (HCV), and chronic HCV infection has been linked to between 300,000 and 400,000 deaths annually as a result of cirrhosis decompensation, end-stage liver disease, and hepatocellular carcinoma [1,2] In 70% of cases, acute HCV infection develops into chronic infection. There are two main characteristics of acute HCV infection: two factors exist: (1) a high risk of developing a chronic hepatitis C (CHC) infection, and (2) most individuals show no symptoms. In 50–84% of cases, an acute HCV infection leads to a chronic progression. Younger people have a significantly lower risk than senior people because they have a higher possibility of the virus clearing up on its own. In 20% of asymptomatic patients and 40% of symptomatic patients with acute HCV infection, spontaneous viral clearance happens within the first three months of infection [3,4,5]. Early treatment of acute HCV infection is crucial to prevent it from progressing to the chronic form, given the risk of acquiring chronic disease and the treatment response rate after the disease is established. PEGylated interferon (PEG-IFN) α-2b or α-2a monotherapy is the mainstay of treatment for acute HCV infection [6,7,8]. Antiviral therapy based on the use of PEG-IFN α-2a or 2b and ribavirin can eradicate viruses in patients with CHC infection; in 40–50% of cases, this results in a sustained infection eradication [8,9]. The purpose of this review is to assess PEG-IFN α-2a or α-2b's effectiveness in treating CHC infection.

The goals of treatment for chronic hepatitis C are, on the one hand, to reduce the morbidity and mortality associated with end-stage liver disease and reduce the risk of transmission and, on the other hand, to eliminate HCV infection and improve the lesion. . histological. For this purpose, studies on interferon monotherapy were conducted several years ago, with very poor results, with a sustained response between 6 and 13% of patients [10,11]. It has subsequently been studied with combined treatment with interferon and RBV, and the rate of sustained response rose to 41% [12,13,14]

This study aims to assessment outcomes of virological response with PEGylated interferon and ribavirin combination therapy in Iraqi patients infected with chronic active hepatitis C virus [15,16,17]

Patient and method

Time and place: This are a descriptive cross-sectional study. In 487 patients with chronic hepatitis C virus infection were enrolled for the period between December 1, 2021, to January 10, 2022, from the Liver Diseases Outpatient Clinic at Baghdad Teaching Hospital.

Patients: 487 patients (297 males and 190 females) with chronic HCV infection. Their data was collected from patients in the liver disease outpatient clinic, which contains (name, age, gender, place of residence, occupation, date of diagnosis, family history of hepatitis C virus, history of infection with hepatitis C virus, alcoholism, etc....). Patients who could not tolerate the treatment until the end of treatment (48 weeks) due to severe side effects and complications of treatment were excluded from the study.

The bound interferon alfa 2a dose is 180 mcg given subcutaneously once weekly, while the ribavirin dose depends on the patient's body weight, body weight less than 75 kg, 400 mg in the morning and 600 mg in the evening; Body weight 75 kg and more: 600 mg twice daily.

STUDY DESIGN: Before ligand therapy, Clinical history was obtained, including if there were any viral co-infections, especially hepatitis C virus and HIV, and if there were any organ diseases (thyroid, heart, kidney, hematology); The history of psychiatric illnesses and body mass index were measured for all patients. Laboratory and radiological results were obtained, including HCV genotype, viral load PCR, ALT/AST, ultrasound results, and renal function tests.

Complete blood count, etc... Finally, if the patient did a liver biopsy, we obtained the result.

On treatment with peg/riba: include the following: Clinical: focusing on the major side effects of peg/riba, which are Fever and flu-like illness, Arthralgia and myalgia, Bleeding episodes, Skin rash, Hair loss, Fatigability, Gastrointestinal symptoms, Cough, Hypertension, Palpitation.

Laboratory: Complete blood count: baseline before treatment, two weeks after peg/riba treatment,

then every 4weeks to end of treatment. Alanine transaminase (ALT): baseline before treatment, four weeks after peg/riba treatment, then every three months to the end of treatment. Blood urea and serum creatinine: baseline before treatment, four weeks after peg/riba treatment, then every three months to end of treatment (Except in cases with renal failure, which is done every 2-4 weeks or according to hemodialysis investigation). Virological responses: PCR viral load had been done in 2 labs (teaching hospital of gastroenterology.

Results

The study found that 297(61%) of patients were males, while 190(39%) of the patients were females; the study found that (49.9%) of patients infected with HCV were of age groups between 20-40 years;(36.1%) of patients were between age groups 40-60 years, while the mean age was 38.2 years with stander deviation 10.3 years. The study found that 29 patients (6%) had a family history of HCV, and this number was divided according to their relationship to the patients.

The study found that 34 patients (7%) were alcoholism or with ongoing alcoholism, and 16 of them stop alcohol after diagnosis of HCV infection. The study found that 19 patients (4%) had HBV co-infection, 23 patients (5%) had cardiac diseases, 19 (4%) patients had ischemic heart diseases and 4(1%) patients had valvar heart diseases. Forty-three patients (9%) were with renal diseases, and they are on regular hemodialysis. The study found that 227 patients (46.6%) were of normal BMI, while four patients (0.8%) were with obesity stage III. The mean BMI was 38.2 kg/m2 with a stander deviation ± 4.8.

In this study, we found that 429 patients (88.1%) had Normal liver size and texture, 19 patients (3.9%) had small size liver and coarse texture and 39 patients (8%) had normal size liver and coarse texture. It was found that 429 patients (88.1%) had Normal liver size and texture, 19 patients (3.9%) had small size liver and coarse texture and 39 patients (8%) had normal size liver and coarse texture. From this study, we can say the study found that 429 patients (88.1%) had Normal liver size and texture, 19 patients (3.9%) had small size liver and coarse texture, and 39 patients (8%) had normal size liver and coarse texture.

In the studied HCV-infected patients under treatment with combination peg/riba, the overall EVR was 55%, overall ETR was 61.8%, and overall SVR was 46%.

During follow-up of HCV-infected patients treated by peg/riba, the most common reported side effect was arthralgia 12.9% followed by fatigability 10.7% and fever or flu-like illness 8%.

During follow-up of HCV-infected patients treated by peg/riba, the study found that 42 patients (9%) had persistent anemia, 28 patients (6%) had persistent leukopenia, and 18 patients (4%) had persistent thrombocytopenia. These blood cell abnormalities had been corrected in all affected patients by decreasing the dose of peg/riba for the whole course of antiviral drug treatment.

Some other patients developed transient blood cell abnormalities that are corrected by temporary dose modification (decrease interferon and/or ribavirin). As shown in the figure below:

Figure shows the Evaluation of HCV-infected patients, according to complete blood counts.

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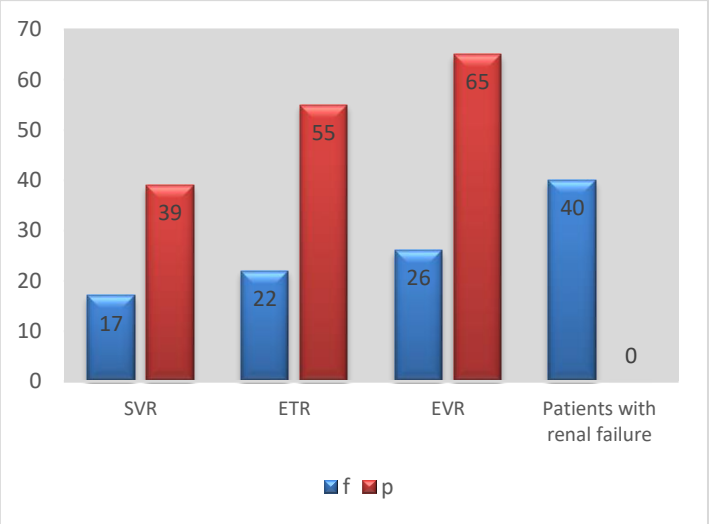
Figure 1- correct by temporary dose modification (decrease interferon and/or ribavirin



The current study was performed on 487 Iraqi patients with chronic HCV infection who were treated with peglated interferon two alfa and ribavirin. According to the obtained results, the gender was male predominant in a ratio of 61% and female in a ratio of 39%. Similar studies were performed in many nearby countries, and the accumulated data show the males was more predominant than females.

Raghad Al-Kayshi et al. in Iraq showed that the male gender was 65% and the female gender was 35%.

According to the obtained results, the more predominant age group was 20-40 years, in the ratio of 49.9%, followed by the age group of 40-60 years, in the ratio of 36.1%, with a mean of 38.2 and a stander deviation of 10.3. Similar result obtained was the mean age in East Asia was 37 years. Raghad Al-Kayshi et al. in Irag showed the mean age was 52.6 years, and the stander deviation was 17.1. The distribution of HCV genotype in the present study was as following: Genotype 1b (43.1%) followed by genotype 4 (34.9%), then 1a (11.9%) while genotype 3 detected in (7%) and genotype 2 in (3.1%). Similar studies were performed in many nearby countries, and the accumulated data show that there are two main patterns for the distribution of HCV genotypes in the Middle East: one is peculiar to the Arab countries where genotype 4 predominates [18] while the other pattern is characteristic of the non-Arab countries (Turkey and Iran) where genotype 1 predominates. Raghad Al Kayshi et al. in Iraq showed that genotype 1b was present in (44%) of patients, followed by genotype 4(36.9 %), then genotype 1a (10%). Dr Akram Ajeel et al. in Iraq showed that genotype 1b was present in (38%) of patients, followed by genotype 4(31 %) and then genotype 1a (14%). There is a significant relationship between HCV genotype and PCR viral load (18 %) of studied patients infected with genotype 4 had high PCR viral load (more than 800000 copies), followed by genotype 1b (17.4%) then genotype 1a (7.4%) while genotype 3 (4.3%) and genotype 2 (1.8%), [19]and overall was (49%) for high PCR viral load. While (25.6 %) of studied patients infected with genotype 1b had low PCR viral load (less than 800000 copies), followed by genotype 4 (16.8%), then genotype la (4.5%), while genotype 3 (2.6%) and genotype 2 (1.2%), and overall was (51%) for low PCR viral load. A similar study had been done in India by Anita Chakravarti et al., which showed that PCR viral load in patients with genotype 1 was significantly Amjad Ali et al. in Pakistan Higher than those with genotypes 2 and 3. It showed that genotype three was associated with higher viral load values than

According to the obtained results, the SVR of studied patients was others. (67.6%) for genotype 3,

(66.7%) for genotype 2, (51.8%) for genotype 439%) for genotype 1b, and (36.2%) for genotype 1a, the overall SVR was (46%). Similar results had been obtained in Iraq by Dr Akram Ajeel, which showed that SVR was (64%) for patients with genotype 3, (63%) for genotype 2, (51%) for genotype 4, (and 36%) for genotype 1. Mona H. Ismail et al., in Saudi Arabia, found that genotype 4 is predominant with SVR was (75%). S.S. Lee et al. showed the SVR was (41%) for genotype 1, (79%) for genotype 2, (72%) for genotype 3. Saudi Gastroenterology study showed that SVR was (51%) for patients with genotype 1, (86.2%) for genotype 2 and 3, and (50.8%) for genotype 4. [20] According to obtained results, the total number of patients with end-stage renal failure and on peg/riba was 40(8.2%), EVR was (63%), ETR was (55%) and SVR was (39%). Similar results had been obtained by the Japan Society for Dialysis Therapy, which showed the ratio of patients with HCV infection treated with peg/riba and on hemodialysis was (9.9%) and SVR was (33.3%). Division of Nephrology, Institute for Clinical Research and Health Policy Studies, Tufts-New England Medical Center, Boston study: SVR in hemodialysis patients with chronic HCV infection who received peg/riba was (41%).

Conclusions:

1. The commonest HCV genotype in the present study is genotype 1b, followed by genotype four, and then la.
2. The overall SVR24 by PEGylated interferon alfa 2a/ ribavirin combination treatment is 46% in the present study.
3. The most responsive genotypes are genotypes 2 and 3, while the least responsive genotypes are genotypes la and 1b.
4. The commonest side effects of pegylated interferon alfa 2a/ ribavirin combination treatment are arthralgia, fatigability, fever, and flu-like illness.
5. Persistent blood count abnormalities occurred in less than 10% due to PEGylated interferon alfa 2a / ribavirin combination treatment (that needs dose decreasing or temporary stoppage).

Patients with renal failure showed less response to PEGylated interferon alfa 2a/ribavirin combination treatment.

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