CHRONIC HEPATITIS C AND EFFICACY OF α INTERFERON CHEMOTHERAPY

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ABSTRACT

Background: Chemotherapy with various drugs is in practice for the management of chronic hepatitis C. One of these drugs is α-interferon. **Objectives:** To study the efficacy of α-interferon therapy in male hepatitis C patients of Faisalabad region of Pakistan. **Period:** Jan. to June 2000. **Setting:** Clinical laboratory Nawaz Medicare Hospital, Model Town, Faisalabad. **Material and Methods:** This international study was conducted on 20 male hepatitis C patients of 24 to 51 years of age, receiving injection of α-interferon thrice a week were selected and their sera were analyzed after the completion of 6 months chemotherapy. **Results:** After six month of treatment with α interferon, (18)90% of the patients became negative for HCV. The levels of serum total bilirubin before (0.939± 0.07mg/dl) and after treatment (0.924± 0.09mg/dl) with α-interferon remained almost normal. Similar results were observed for serum direct and indirect bilirubin.The levels of alkaline phosphatase (ALP) in our study subjects were within normal limits before and after treatment with α-interferon. The levels of Serum Glutamate Pyruvate Transaminsae (SGPT) were highly raised (337.40 ± 75.38 U/l) prior to treatment and became normal (26.8±7.42U/l) after treatment with α-interferon. **Conclusion:** α-interferon therapy in chronic hepatitis C patients for a period of 6 months gives sustained virological as well as biochemical responses and is useful for maintenance of SGPT values within normal limits in hepatitis C patients like other countries of the world.

Key Words: Chronic hepatitis 'C', α-Interferon, Liver function tests.

INTRODUCTION

Liver is a complex organ, uniquely placed for handling dietary compounds. It is responsible for the synthesis of many metabolically important compounds and also for excretion and metabolism of toxic compounds.[1] Chronic hepatitis 'C' caused by hepatitis 'C' virus (HCV) results in inflammation of liver followed by necrosis, fibrosis and cirrhosis of the liver.[2] High incidence of liver cancer in patients having chronic hepatitis C and cirrhosis has also been reported.[3]

Bilirubin, Serum Glutamic Pyruvate Transaminase (SGPT) and Alkaline Phosphatase (ALP) have been widely used as liver function tests (LFTS) in hepatitis. SGPT is the cytoplasmic enzyme and its increased level is the specific indicator of liver damage. A greatly increased plasma ALP activity is the main indicator of biliary obstruction, though it provides no information about the site of that obstruction[4].

Interferon alpha has been found to be quite beneficial for hepatitis 'C' patients and might also prove effective in treatment of membrane proliferative glomerulonephritis, thus minimizing the chances of end stage renal disease with major economic implications for individuals as well as society at larges.[5] The present project was designed to evaluate the effect of α-interferon on the levels of serum bilirubin, SGPT and Alkaline phosphatase in chronic hepatitis 'C' patients under local conditions.

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MATERIALS AND METHOD

This international study was conducted on twenty chronic hepatitis C male patients between 24-51 years of age receiving injection α-interferon thrice a week for 6 months as treatment from Nawaz Medicare Hospital were registered for project studies. Levels of serum total, direct and indirect bilirubin, ALP and SGPT were determined for all patients before and after chemotherapy with α-interferon for 6 months.

Analytical Methods

Serum total bilirubin (STB) was determined following the kit method of Merk diagnostica[6] and serum direct bilirubin (SDB) level was determined by the method of Schellong and Wende.[7] SGPT was assayed by optimized UV test[8] and serum alkaline phosphatase level was determined by kinetic calorimetric method using the kit prepared by Merk diagnostic α-interferon.

RESULTS

After six months of treatment with α-interferon, 18 out of 20 patients became negative for HCV. Biochemical findings including the levels of Serum total bilirubin (STB), Serum Direct bilirubin (SDB), Serum indirect bilirubin (SIB), Alkaline Phosphatase (ALP) and Serum Glutamic Pyruvate Transaminase

(SGPT) were recorded in all the 20 chronic hepatitis 'C' patients before and after chemotherapy with α-interferon for 6 months and the results are described as under:

Table : I
The individual and average values of serum total, direct and indirect bilirubin in hepatitis C patients before and after treatment with α Interferon

Serum Total Bilirubin (STB) (mg/dl)		Serum Direct Bilirubin (SDB) (mg/dl)		Serum Indirect Bilirubin (STB) (mg/dl)	
Before Treatment	After Treatment	Before Treatment	After Treatment	Before Treatment	After Treatment
0.9359±0.76	0.7925±0.89	0.503±0.117	0.494±1.28	0.436±0.08	0.422±0.073

Table II: Values of SGPT and ALPin hepatitis C patients before and after treatment with α Interferon

SGPT (U/L)		ALP (U/L)	
Before Treatment	After Treatment	Before Treatment	After Treatment
337.40±75.38	26.8±7.42	211.10±65.194	211.55±64.075

1. Serum Total Bilirubin

The results indicated minor differences in the individual levels of STB, with range before (0.73-1.38mg/dl) and range after treatment (0.78-1.12mg/dl) with α-interferon (Table:I). The average values of STB before and after treatment with α-interferon were found to be 0.939± 0.076 and 0.924±0.089 mg/dl respectively. Statistical analysis by t-test revealed non significant (p>0.05) difference.

2. Serum Direct Bilirubin

The range of individual values of SDB showed minor differences which were found to vary from 0.33 to 0.76mg/dl in patients before treatment and from 0.35 to 0.77 mg/dl after chemotherapy for 6 months (Table 1). The average SDB values were found to be 0.503±.117 and 0.494±1.28 mg/dl respectively before and after treatment with α-interferon. Comparison of SDB values by t-test indicated non significant (P>0.05) difference.

3. Serum Indirect Bilirubin

The average values of SIB were found to be 0.436±0.08 and 0.422±0.073 mg/dl respectively before and after treatment with α-interferon which showed very small difference of range at individual levels (Table:I). Results of t-test revealed non-significant (P>0.05) difference between SIB values before and after chemotherapy.

4. Alkaline phosphatase (ALP)

Results showed very small differences in case of only a few patients in comparison of individual values (Table:II). The average ALP values of patients before and after chemotherapy were found to be 211.10± 65.194 and 211.55± 64.075 U/l respectively. Non significant (P>0.05) difference was observed between the levels of ALP before and after chemotherapy.

5. Serum Glutamate Pyruvate Transaminase

The range of the elevated SGPT levels (262-422U/l) in chronic hepatitis 'C' patients before chemotherapy gave indication of the extent of liver cells (hepatocytes) damage. But after treatment with α-interferon the level of SGPT in these patients declined and became normal in range (16-47U/l) at the end of 6 months chemotherapy (Table:II)

The average values of SGPT, before and after treatment with α-interferon were found to be 337.40± 75.38 and 26.8± 7.42 U/l respectively. Comparison of SGPT levels by t-test revealed highly significant (p<0.001) difference.

DISCUSSION

In the initial stages of chronic hepatitis there is no widespread liver damage, necrosis or fibrosis. So the excretory functions of the liver remain normal.[2] In our study subjects, the levels of serum total bilirubin before and after treatment with á-interferon remained normal. Similar trend was observed in case of serum direct bilirubin and serum indirect bilirubin. The levels of ALP in chronic hepatitis C patients were found to be almost normal before and after treatment with α-interferon. ALP is present in hepatocytes, bound to hepatocyte membrane. In chronic hepatitis 'C' prior to the development of cirrhosis of liver cancer the pressure in the biliary canaliculi remains almost normal. The ALP in liver disease is raised only when there is obstruction in the biliary passage.[3] In our study individuals, the chronic hepatitis was in initial stages and there was no obstructive element. So, level of ALP remained almost normal before and after treatment with α-interferon. The most important and diret indicator of liver cells damage is SGPT.[10] In healthy state, hepatocytes are broken down and regenerated. In healthy people, the level of SGPT remains within normal limits (9-40 U/l) but in

chronic hepatitis 'C' the incidence of hepatocytes break down is increased due to viral infection. More break down of hepatocytes result in increased entry of SGPT into serum. SGPT level was therefore, increased in chronic hepatitis 'C' patients and after treatment with α-interferon it's level decreased to normal level. In earlier studies, patients were given higher doses of IFN (5MU, thrice weekly). Further more, a sustained response was predicted on maintenance of normal ALT values.[11] When IFN were used at a dose level of 3 million units, 3 times weekly for a period of 6 months, the biochemical End of Therapy Response (ETR) rates ranged from 35-50% and SR (Sustained response) rates ranged from 8-21%. The virolgical ETR rates varied from 27 to 35% and SR rates from 8 to 12%.[12] Hoofnagle et al,[13] describe that interferon alpha, when given to patients with non A, Non B hepatitis was able to normalize liver enzyme levels in a substantial number of patients. They also noted that relapses might occur if treatment was discontinued.

CONCLUSION

From the findings of present study it was concluded that á-interferon improves liver function and is an effective drug for the treatment of chronic Hepatitis 'C' under Pakistani conditions. Chemotherapy should not be discontinued and doses of á-interferon should be taken regularly to avoid any chances of relapses

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