

Assessment of Thyroid Dysfunction in Chronic Hepatitis C Patients Treated With Interferon Alpha and Ribavirin Therapy

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ABSTRACT

The aim of study is to assess the thyroid dysfunction in chronic hepatitis C patients treated with interferon alpha and ribavirin therapy. 70 cases of chronic hepatitis C disease were selected for the study. They were divided into two groups Group A included 35 patients of chronic hepatitis C with positive HCV, RNA on PCR who have received 06 months combined therapy of interferon alpha and ribavirin. Group B included 35 patients of chronic hepatitis C with positive HCV RNA on PCR, not taking any therapy. The subjects were selected from different hospitals. Biochemical parameters i.e. TSH was done by commercially available kit by ELISA method. Sign test is applied for the level of significance.

Results: Females are more prone to develop thyroid dysfunctions i.e. 4/35 (11.5%) as compared to males. TSH level was increased in 04 (11.5%) i.e., hypothyroidism and decreased in 2 (5.8%) i.e. hyperthyroidism in hepatitis C patients after interferon and Ribavirin therapy.

Key words: Hepatitis C, anti TPO antibodies

INTRODUCTION

Interferon and Ribavirin therapy is said to be causing thyroid dysfunction (TD) and autoimmunity and is widely reported in the literature. There is controversial data regarding the incidence, severity and physiopathological mechanism of such manifestations^{1,2}. Until recently interferon alpha (IFN - a) has been considered the only option available for the treatment of chronic hepatitis C (CHC) with sustained remission in about 20-25% of cases³. In recent years, it has been established that the combination of IFN-a with ribavirin (RIBA) may increase the biochemical and virological response rates in chronic hepatitis C (CHC) patients to about 40%⁴. Currently the combination therapy of IFN-and RIBA is the first line treatment in patients⁵. Interferon is a low molecular weight glycoprotein cytokines produced by host cells in response to viral infections. Interferon bind to specific cell surface receptors and effect viral replication at multiple steps: viral penetration, synthesis of viral mRNA, assembly of viral particles and their release, but the most widespread effect is direct or indirect suppression of viral protein synthesis⁶.

The therapeutic effectiveness of ribavirin in chronic hepatitis C patients seems to be correlated to

its immune modulatory effects. In particular ribavirin seems to modulate the T helper1 (Th1) and T helper2 (Th2) subset balance, by activating type1 cytokine in the HCV specific immune response^{8,9}.

MATERIALS AND METHODS

It was a cross sectional comparative study done in department of Pathology, Quaid -i- Azam Medical College, Bahawalpur.

Groupings: A total of 70 patients of chronic hepatitis C with positive HCV RNA on PCR were included in this study. Two different groups of patients were made.

Group A: It comprised 35 patients of chronic hepatitis C with HCV RNA positive on PCR, who have received six months combined therapy of interferon alpha and ribavirin. Before start of therapy, their baseline values regarding thyroid dysfunction were also taken. Group A is further divided into two sub groups: **Group A1:** Patients of Chronic hepatitis C before interferon therapy. **Group A2:** Patients of Chronic hepatitis C after interferon therapy.

Group B: It comprised 35 patients of chronic hepatitis C with positive HCV RNA on PCR, not taking any therapy. They were also followed for thyroid dysfunction for the same period of time. Group B is further divided into two sub groups: **Group B1:** Patients of Chronic hepatitis C before study. **Group B2:** Patients of Chronic hepatitis C after study.

Inclusion Criteria: Both male and female adult cases of chronic hepatitis C with positive HCV

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antibody, elevated ALT level and positive HCV RNA on PCR with normal thyroid function tests.

Exclusion Criteria: Patients having history of thyroid disease confirmed by investigations i.e. TSH, T3, T4

The required information was collected from the study subjects through a Performa. About 5 ml blood was drawn with a disposable syringe from an appropriate vein under aseptic conditions, preferably in the morning when the patient was overnight fast. TSH was performed and results were evaluated for the data analysis.

RESULTS

The detail of results is given in tables 1, 2

Table1: Gender distribution with thyroid dysfunction in group A

Gender	Cases with TD	Cases without TD
Male	2(5.7%)	19(94.3%)
Female	4(11.4%)	10(88.6%)

Table 2: Comparison of TSH in group a before and after therapy

TSH	Group A (with therapy)	
	A1 vs A2	P value
Negative signs	21	P<0.05 (Significant)
Positive signs	14	
Difference	07	

Sign test is applied:

Group A1: Patients of Chronic hepatitis C before interferon therapy

Group A2: Patients of Chronic hepatitis C after interferon therapy

DISCUSSION

Results of this study highlight that females are more prone to develop thyroid dysfunctions i.e., 4/14 (11.4%) as compared to males i.e., 2/21 (5.7%). This may be due to that the females are more susceptible to interferon-alpha induced thyroid dysfunction than males and hormonal status of females might be one of the possible causes. Hsieh et al (2001)¹⁰ conducted similar study of assessing thyroid dysfunctions in CHC patients treated with interferon and ribavirin therapy although some studies did not find this correlation of gender with thyroid dysfunction^{11,12,13}. In this study, out of 35 patients, 06/35 (17.2%) patients were with thyroid dysfunctions mostly hypothyroid. This study is consistent with the results of Dalgard et al (2002)¹¹, Manns et al (2001)¹², Fried et al (2002)¹³, Carella et al (2001)¹⁴ and Pummal and Laurberg(2003)¹⁵ who also observed thyroid dysfunctions with hypothyroidism.

CONCLUSION

So it is concluded that Interferon in combination with Ribavirin therapy does not cause thyroid dysfunction (TD) in majority of HCV patients undergoing such treatment. The incidence of TD in HCV patients receiving combination therapy is generally small i.e.17.2% with hypothyroidism being the most common and 11.5% with Hyperthyroidism that is uncommon.

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