Original Article

Thyroid Dysfunction Hep. C Treatment

Overt Thyroid Dysfunction During Treatment of Hepatitis C Patients with Interferon and Ribavirin

Nazir Ahmad[1], Jawed Akhtar Samo[2] and Hammad-Ur-Rehman Bhatti[3]

ABSTRACT

Objective: To find out the thyroid dysfunctions during treatment hepatitis C patients with Interferon and Ribavirin.
Study Design: Observational / descriptive study
Place and Duration of Study: This study was carried out at the Teaching Hospital, Ghazi Khan Medical College, DG Khan from April 2015 to January 2016.
Patients and Methods: Fifty patients of chronic HCV were enrolled.
Results: Out of 50 treated patients 35 were female and 15 were male. Fifteen (15%) patients developed thyroid dysfunction and out of these 15 patients (11 female [73.3%] and 4 male [26.7%]).Ten (66.6%) out of 15 patients developed hypothyroidism and 5(33.3%) out of 15 patients developed hyperthyroidism. Seven (70%) out of 10 patients who developed hypothyroidism needed levothyroxine therapy. Two (40%) out of 5 patients who developed hyperthyroidism needed carbimazol therapy for their symptoms and disease control. All patients completed hepatitis C treatment with combined Peg-Interferon Alpha-2a and Ribavirin therapy.
Conclusion: The involvement between thyroid dysfunction in hepatitis C individuals and management with IFN-alpha and RIBA.
Key Words: Interferon Alpha-2a, Ribavirin, Chronic hepatitis C

Citation of article: Ahmad N, Samo JA, Bhatti HR. Overt Thyroid Dysfunction during Treatment of Hepatitis C Patients with Interferon and Ribavirin. Med Forum 2016;27(5):30-32.

INTRODUCTION

The most important reason of chronic hepatic disease, cirrhosis and hepatocellular carcinoma is hepatitis C. The global prevalence is 3% encompassing 170 million victims. 4 million new cases are added to the pool due to contaminated injection needles, transfusion contamination and parents contact.[1] The trend has stabilized now-a-dyas.[2] In North America, it is the most common chronic blood borne infection.[3]

In women with chronic HCV infection, thyroid disorders are common. The patients with HCV infection presents the anti-thyroid antibodies are 5% to 17%, 2%-13% patients have hypothyroidism.[4] Elder women have the maximum frequency of both thyroid antibodies and thyroid disease. Most patients are asymptomatic hypothyroidism and do not need exact management. It is debated whether or not the prevalence is higher than in age and sex-matched controls.[5]

[1.] Department of of Medicine, District Teaching Hospital, Ghazi Khan Medical College, DG Khan.
[2.] Department of of Medicine, Khairpur Medical College, Khairpur Mirs
[3.] Department of Medicine, Islam Medical College Sialkot

Correspondence: Dr. Nazir Ahmad, Assistant Professor of Medicine, District Teaching Hospital, Ghazi Khan Medical College, DG Khan
Contact No.: 0300-9638128
E-mail: drmalik.nazir.ahmed@gmail.com

Received: March 01, 2016; Accepted: April 07, 2016

IFN therapy is not a contraindication in the presence of low titles of autoantibodies. In patients with high titres since recovery is complete at the end of therapy interruption of IFN therapy is not needed. TSH and autoantibodies should be checked before, during and after IFN treatment, and counselling should be offered to patients regarding thyroid dysfunction.[6] This review questions the relationship of IFN and ribavirin (RIBA) for treatment of HCV and thyroid dysfunction.

Several extrahepatic diseases that occur with chronic HCV come out to be straight associated to the viral infection. These comprised cryoglobulinemia, lymphoma, thyroiditis, lichen planus and porphyria cutanea tarda.[7-10] This may also be a side effect of interferon (IFN)-based treatment. Chronic HCV virus infection has the highest prevalence of thyroid autoantibodies and disorders.[11,12]

MATERIALS AND METHODS

This prospective study was carried out Teaching Hospital, Ghazi Khan Medical College, DG Khan from July 2015 to January 2016. Fifty patients of chronic HCV were enrolled.

RESULTS

Out of 50 patients, 35 were female and 15 were male. During treatment with combination of Peg-interferon alpha-2a and Ribavirin therapy, among 15 patients, 11 females (73.3%) and 4 males (26.7%) developed overt thyroid disease and were diagnosed clinically and

biochemically suffering from thyroid dysfunction. Ten (66.6%) suffered from overt hypothyroidism and 5 (33.3%) patients developed hyperthyroidism. Fatigue, weight loss, irritability and nervousness were reported by all five patients with hyperthyroidism but palpitations and resting tremors occurred in only 2 out of the 5 patients also had in hands. Seven (70%) patients having hypothyroidism were treated with levothyroxine and they responded well to the treatment clinically and biochemically and 6(60%) had normal levels of TSH management of chronic HCV. Most patients were infected with genotype 3.

DISCUSSION

The prevalence of thyroid dysfunction with interferon therapy in patients contaminated with chronic hepatitis C ranges from 2.5% to 30%[11,12], the mean being of 6.6%. [13] The prevalence of Hypothyroidism (3.8%) was slightly higher than hyperthyroidism (2.8%). The fact that higher doses of interferon alpha are used to treat chronic hepatitis-B infection[14] but thyroid disease is less common in chronic hepatitis B infection when compared with hepatitis-C treated patients. This points to synergistic effects of interferon therapy and HCV infection in the causation of thyroid disease. It is known that Interferon results in the commencement and propagation of dendritic and memory T cells.[13] The destruction of thyroid gland is caused by auto-antibodies subsequent to interface with hepatitis-C virus particle present in it.[15] When interferon alpha is added further obliteration of reddened gland occurs. Moreover interferon therapy has direct toxic effect on thyroid cells.[16] This leads to biphasic thyroid response in the form of hypo and hyperthyroidism.

4.7% to 27.8% of patients develop thyroid dysfunction with this therapy, the mean being frequency 12.1%. When interferon is used alone the frequency is as low as 6.6%.[17] The percentage proportion of hypothyroidism to hyperthyroidism in many studies is higher (8.1%: 3.8%) compared to our study (10%: 5%). Moreover female percentage proportion was higher internationally (17.7%: 8.3%) in relation to our study (11%: 4%). Overall our prevalence of thyroid disorders (15%) was higher than colleagues elsewhere reported.(3%).[18] As expected fatigue, myalgias and depression were common with hypothyroidism. Therefore thyroid function test should be routinely performed.[17.]

We agree with international literature that combination therapy should be sustained; even in those who develop overt thyroid disease.[12] Most thyroid disorders do not need long-standing therapy and often return to normal. Workers[18] have found that interferon alpha induced thyroid related disorders were reversible in 61.2% of cases (55.8% hypothyroidism and 69.7% hyperthyroidism).

CONCLUSION

The association among thyroid dysfunction in hepatitis C individuals and management with IFN-alpha and RIBA exists.

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Lauer GM, Walker BD. Hepatitis C virus infection. N Engl J Med 2001; 345: 41-52.
2. World Health Organization website. Available at: http:// www.who.int/ csr/disease/hepatitis/ whocdsc srlyo2003/en/index3. html. Accessed July 10, 2007.
3. Alter MJ, Kruszon MoranD, Nainan OV. The prevalence of hepatitis C virus infection in the United States, 1988 through 1994. N Engl J Med 1999; 341: 556-62.
4. Antonelli A, Ferri C, Pampana A. Thyroid disorders in chronic hepatitis C. Am J Med 2004; 117: 10-3.
5. Kee KM, LEE CM, Wang JH, Tung HD, Changchien CS, Lu SN, et al. Thyroid dysfunction in patients with chronic hepatitis-C receiving a combined therapy of interferon and ribavirin incidence. J Gastroenterol Hepatol 2006;21: 319-26.
6. Ramos CM, Trejo O, García-Carrasco M, Font F. Therapeutic management of extrahepatic manifestations in patients with chronic hepatitis C virus infection. Rheumatol 2003;42: 818-28.
7. Cacoub P, Renou C, Rosenthal E. Extrahepatic manifestations associated with hepatitis C virus infection. The Germivic. Groupe d'Etude et de Recherche en Medecine Interne et Maladies Infectieuses sur le Virus de l'Hepatite C. Medicine (Baltimore) 2000; 79: 47-56.
8. El-Serag HB, Hampel H, Yeh C, Rabeneck L. Extrahepatic manifestations of hepatitis C among United States male veterans. Hepatol 2002;36: 1439-45.
9. Antonelli A, Ferri C, Pampana A. Thyroid disorders in chronic hepatitis C. Am J Med 2004; 117: 10-3.
10. Ward DL, Bing-You RG. Autoimmune thyroid dysfunction included by interferon-alpha treatment for chronic hepatitis-C. Endocr Pract 2001; 752-8.
11. Qureshi S, Batool U, Iqbal M, Qmarah Q, Kaleem R, Aziz H, et al. Response rates to standard interferon treatment in HCV genotype 3a. JAMC 2009; 21: 10-4.
12. Mazziotti G, Servillo F, Stornaiuolo G. Temporal relationship between the appearance of thyroid auto-antibodies and development of destructive thyroiditis in patients undergoing treatment with two different type-1 interferons for HCV related

chronic hepatitis. J Endocrinol Invest 2002;25: 624-30.
13. Minelli R, Valli MA, Di Secli D, Finardi L, Chiodera P, Bertoni R, et al. Is steroid therapy needed in the treatment of destructive thyrotoxicosis induced by alpha interferon in chronic hepatitis-C. Horm Res 2005;63: 194-9.
14. Lloyd AR, Jagger E, Post JJ, Crooks LA, Rawlinson WD, Hahn YS, et al. Host and viral factors in the immunopathogenesis of primary hepatitis-C virus infection.Immunol Cell Biol 2007;85: 24-32.
15. Snell NJ. Ribavirin-current status of a broad spectrum antiviral agent. Expert Opin pharma-cotherapy 2001;21317-1324.
16. Marcellin P, Pouteau M, Benhamou JP. Hepatitis-C virus infection, alpha interferon therapy and thyroid dysfunction. J Hepatol 1995;22364-369.
17. Koh LK, Greenspan FS, Yeo PP. Interferon alpha induced thyroid dysfunction. Thyeoid 1997; 7891-6.