Mini Review Article

Research on Chronic Diseases

Autoimmune Thyroid Diseases and Cancer associated with Chronic Hepatitis C Infection

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Abstract

Typically, patients with chronic Hepatitis C Virus (HCV) infection have elevated serum anti-thyroperoxidase and/or anti-thyroglobulin antibodies, ultrasound evidence of chronic autoimmune thyroiditis, and hypothyroidism. Subclinical thyroid disease in women compared with healthy controls or infected patients with hepatitis B virus. In patients with "HCV-associated mixed hemoglobinopathy" (MC + HCV), a higher incidence of thyroid autoimmune disorders was compared not only with controls but also with HCV patients without cold hemoglobin disease. Patients with CD+HCV or chronic HCV infection have a higher incidence of papillary thyroid cancer than controls, especially in patients with autoimmune thyroiditis. Patients with chronic HCV or CD+HCV infection, in the presence of autoimmune thyroiditis, have elevated serum levels of the chemokine T-helper (Th)1 (C-X-C module) ligand 10 (CXCL10) than, but normal Th2 (C-C module) levels of chemokine ligand 2, than patients without thyroiditis. Thyroid HCV infection may act by upregulating CXCL10 gene expression and secretion in thyroid cells that recruit interferon-γ and tumor necrosis factor-α-secreting Th1 cells. These cytokines are able to induce new CXCL10 secretion by thyroid cells, thereby maintaining the immune cascade, which may lead to the emergence of autoimmune thyroid disorders in susceptible subjects have a genetic disease. Thyroid function should be carefully monitored, especially if nodules are present in HCV patients. Approximately 130 to 170 million people worldwide have been infected with the Hepatitis C Virus (HCV). Hepatocytes represent the primary site of viral replication, and HCV replication is present in extra hepatic tissues and peripheral blood mononuclear cells. In a first study, Tran et al. reported two cases of Hashimoto's thyroiditis associated with chronic active HCV infection, suggesting that HCV infection may be involved in the onset of AT.

Keywords: Autoimmune • Thyroid • Infections • Diseases • Chronic Hepatitis C

Introduction

The prevalence of HCV infection in patients with various thyroid disorders has been evaluated by several studies with conflicting results. Assessment of HCV infection rates in 200 patients with thyroid disease; among 50 patients with goiter alone, none were positive for anti-HCV; out of 50 people with goiter, 2 are positive; out of 5 people with myxedema, 2 were positive; Out of 50 patients with Hashimoto's thyroiditis, 12 were positive. These results suggest that HCV infection may be related. Recently, compared 462 AbTPO and/or AbTg-positive individuals with 360 antibody-negative individuals and found no difference in anti-HCV positivity between the 2 groups (1.3%). In a study 66 HCV+ patients were evaluated and AbTPO was detected in 4/54 (7.4%) patients, whereas AbTss was not detected in any of the patients. Contradictory results have been reported in previous studies of patients with HCC, with some supporting an association between HCV infection and AITD and others not. However, some earlier studies were negative due to lack of control for factors that may influence the development of thyroid autoimmune disease, such as iodine intake [1, 2].

Discussion

Indeed, the largest HCV and thyroiditis study, which assessed iodine deficiency, demonstrated that hypothyroidism and thyroid autoimmunity were significantly more common in HCV patients compared with control group. The prevalence of thyroid disorders was studied in 630 consecutive patients with chronic hepatitis due to HCV infection; all patients were free of cirrhosis and hepatocellular carcinoma and were not treated with interferon. Three control groups were included: (a) 389 subjects from iodine-deficient areas, (b) 268 people living in iodine-deficient areas, and (c) 86 patients > 40 years of age with hepatitis B chronic [3, 4].

Measurement of stimulating hormone (TSH), free T4 (FT4) and free T3 (FT3), as well as AbTss and AbTPO. Mean TSH levels were higher and FT3 and FT4 levels were lower in CHC patients compared with all other groups. CCH patients were more likely to have hypothyroidism (13%), AbTss (17%()) and AbTPO (21%) compared with all other groups. The results of this study suggest that hypothyroidism and thyroid autoimmunity are more common in HCC patients, even in the absence of cirrhosis, HCC, or interferon therapy, compared with controls. HCV negative or in patients with chronic hepatitis B [5].

Evidence for this association also comes from a study that reported higher rates of hypothyroidism and AbTgs in children with untreated CHC compared with healthy controls without HCV infection. In most studies examining the frequency of thyroid disorders in HCV patients, approximately 10-15% of patients had positive anti thyroid antibodies prior to initiation of IFN therapy. In addition, pooling of data from controlled studies of HCV infection and thyroid autoimmunity revealed a significantly increased risk of thyroiditis in HCV-infected patients. A large study including 146,394 HCV-infected patients confirmed these results showing a significant increase in the risk of thyroiditis. This was a retrospective cohort study of US veterans' health care facility users from 1997 to 2004, including 146,394 CHC patients with at least 2 visits and 572,293 CHC patients without infected with HCV. The risk of thyroiditis is significantly increased in HCV patients. Since 97% of HCV patients are men and it is known that men have a lower risk of thyroiditis than women, this result is particularly interesting [6, 7].

Conclusion

Previous studies have shown that 38-76% of patients with chronic HCV infection develop at least one Extra Hepatic Manifestation (EHM). The association between HCV and Mixed Cryoglobulinemia (MC) was first described subsequently, involvement of multiple organs and systems has been reported (kidneys, skin, eyes, joints and nervous system). Infected extrahepatic tissues can act as an HCV reservoir and play a role in both HCV persistence and infection reactivation. HCV, as an etiological agent that replicates and expresses viral proteins in the extra hepatic tissues themselves, contributes to EHM associated with chronic HCV infection. An important feature of HCV is that the virus avoids immune rejection. One consequence is chronic infection and accumulation of circulating immune complexes and autoimmune phenomena, as recently demonstrated in their study with 297 Chinese patients [8-10].

Acknowledgement

None

Conflict of Interest

None

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