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Editorial Open Access

Thyroid Diseases and Hepatitis C Chronic Infection

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Editorial

More than 185 million subjects worldwide are infected by Hepatitis C virus (HCV), and about 20% of patients chronically infected with HCV progress to cirrhosis and 1-2% to hepatocarcinoma [1]. HCV chronic infection is also associated with extrahepatic manifestations in up to 74% of patients (mixed cryoglobulinemia, lymphomas, rheumatic disorders, type 2 diabetes, and thyroid disorders) [2]. For about two decades combination therapy with PEGylated-interferon-α [3] and ribavirin has been the standard of care for patients with HCV chronic infection; however, interferon had limited effectiveness and was associated with important adverse side effects. More recently, advances in understanding the molecular pathways associated with HCV life cycle, and the complex inflammatory network involving cytokines and chemokines associated with HCV chronic hepatitis, have led to important advancements in therapy [4]. In the last years, direct-acting antivirals (DAAs) (as protease inhibitors, polymerase inhibitors, or NS5A inhibitors) have been used to treat HCV chronic infection, resulting in shorter treatment duration, better efficacy and tolerance, and are able to eradicate HCV [5,6].

The clearance of HCV after PEGylated-interferon-α treatment, with or without DAAs has been proven to be associated with polymorphisms in the region of the interleukin (IL)-28B gene, and circulating (C-X-C motif) ligand 10 (CXCL10) levels. The interferon-free therapies are also effective for resistant HCV genotypes and patients failing to respond to prior therapies or ineligible patients [7].

It has been shown that patients with HCV chronic infection have frequently high levels of serum anti-thyroid autoantibodies (anti-peroxidase and/or anti-thyroglobulin autoantibodies); furthermore, they have more frequently ultrasonographic signs of chronic autoimmune thyroiditis (thyroid is hypoechoic), and subclinical hypothyroidism (overall in female gender) with respect to hepatitis B virus infected patients and healthy controls [8]. In patients with "HCV-associated mixed cryoglobulinemia" (MC+HCV), a higher prevalence of thyroid autoantibodies and hypothyroidism has been shown in comparison with controls, and also versus patients with HCV chronic infection but without cryoglobulinemia.

Patients with HCV chronic infection or MC+HCV show a high prevalence of papillary thyroid cancer, in particular in female patients with autoimmune thyroiditis [7,8].

The presence of autoimmune thyroiditis in patients with HCV chronic infection, or MC+HCV, is associated with high circulating levels of T-helper (Th)1 CXCL10 chemokine, with respect to patients without thyroiditis [9,10].

It has neen hypothesized that HCV infection of the thyroid could upregulate the expression and secretion of CXCL10 in thyrocytes recruiting Th1 lymphocytes, that are able to secrete interferon-γ and tumor necrosis factor-α cytokines, inducing a further secretion of CXCL10 by thyrocytes, thus initiating and perpetuating an immune cascade, that may be associated with the appearance (in genetically predisposed subjects) of autoimmune thyroid disorders [7,8].

For the above mentioned reasons, a careful monitoring of thyroid function and thyroid nodules is recommended in HCV patients, overall in female gender. The role of new DAAs in the treatment or prevention of thyroid disorders in HCV patients remains to be clarified.

References

1. Sarna A, Panda S (2015) HCV in people who inject drugs: a neglected epidemic. Lancet Infect Dis 15: 4-5.
2. Ferrari SM, Fallahi P, Mancusi C, Colaci M, Manfredi A, et al. (2013) HCV-related autoimmune disorders in HCV chronic infection. Clin Ter 164: e305-312.
3. Antonelli G (2008) Biological basis for a proper clinical application of alpha interferons. New Microbiol 31: 305-318.
4. Dustin LB, Cashman SB, Laidlaw SM (2014) Immune control and failure in HCV infection--tipping the balance. J Leukoc Biol 96: 535-548.
5. Feld JJ (2014) Interferon-free strategies with a nucleoside/nucleotide analogue. Semin Liver Dis 34: 37-46.
6. Kim do Y, Ahn SH, Han KH (2014) Emerging therapies for hepatitis C. Gut Liver 8: 471-479.
7. Antonelli A, Ferrari SM, Ruffilli I, Fallahi P (2014) Cytokines and HCV-related autoimmune disorders. Immunol Res 60: 311-319.
8. Antonelli A, Ferri C, Fallahi P, Ferrari SM, Ghinoi A, et al. (2006) Thyroid disorders in chronic hepatitis C virus infection. Thyroid 16: 563-572.
9. Antonelli A, Ferri C, Fallahi P, Nesti C, Zignego AL, et al. (2002) Thyroid cancer in HCV-related mixed cryoglobulinemia patients. Clin Exp Rheumatol 20: 693-696.
10. Antonelli A, Ferri C, Fallahi P, Pampana A, Ferrari SM, et al. (2007) Thyroid cancer in HCV-related chronic hepatitis patients: a case-control study. Thyroid 17: 447-451.