

Endometriosis and Hashimoto's Thyroiditis: Causal or Casual Association?

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Endometriosis is a benign gynecological disease that affects 5-10% of women of reproductive age worldwide [1]. It is characterized by the presence of tissue with epithelial and stromal characteristics of endometrium in extra-uterine sites [1,2]. The etiology of endometriosis has not yet been fully defined [1]. Recently, immunologic disorders have been proposed to play a pathogenesis role in endometriosis [1,2]. It has been shown that endometriosis shares similarities with several autoimmune disorders [1,2]. Concordantly, It has been found that women affected by endometriosis frequently suffer from autoimmune inflammatory diseases such as systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), multiple sclerosis (MS) and Hashimoto's thyroiditis (HT) [3]. Autoimmune and endocrine diseases have been associated with magnified T helper cell type 1 (Th1) pattern including the involvement of Th1 cell-associated cytokines as Interferon-gamma (IFN- γ) [3]. It has been proved that IFN- γ plays a direct role in regulation of Th1 cell development [4]. Intriguingly, deep infiltrating endometriosis has been linked to Th1 immune response with altered IFN- γ production [1]. It has been found an elevated IFN- γ expression in ectopic compared to eutopic endometrium [5]. Furthermore, it has been suggested that polymorphism in the IFN- γ gene may be connected with the risk of endometriosis [6]. IFN- γ production is strongly induced by interleukin-18 (IL-18) [7]. Interestingly, it has been detected that IL-18 may be a key cytokine in developing the pathogenesis of endometriosis [7]. It has been demonstrated that IL-18 significantly increases in adenomyosis patients in comparison to control group [8]. In addition, polymorphism in the IL-18 gene has been positively related to the risk of developing endometriosis or the stage of endometriosis [9]. HT is an autoimmune disease in which Th1-mediated immune response has been linked to the destruction of thyroid follicular cells [10]. It is more common in women affected by endometriosis than in the general female population [3]. It has been observed that intrathyroidal interaction between IL-18 and IFN- γ may have an important role in promoting the local immune response that leads to the thyrocytes destruction in HT [10]. It has been discovered a nexus between IL-18 genotype and the risk of HT [11]. Moreover, polymorphism in the IFN- γ gene has been correlated with the severity of HT [11,12]. Such insights suggest a causal link between endometriosis and HT. Therefore, we hypothesize that both diseases may be the different facets of similar abnormalities in the signaling pathways between IFN- γ and IL-18. Research studies are required to better define whether polymorphism in the genes for IL-18 and IFN- γ may have a direct effect on both diseases susceptibility and their clinical presentation. Functional polymorphism in INF- γ and IL-18 might explain why some women with endometriosis get HT where as others do not. Women with endometriosis should be screened for HT considering the possible coexistence of these conditions. Given the importance of IFN- γ and IL-18 in the initiation and perpetuation of chronic autoimmune inflammation, we focus on the efforts in establishing whether anti-IFN- γ and/or anti-IL-18 antibody therapeutic approach may be a more valid alternative to the currently treatment for endometriosis and HT.

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