**Diseases associated with Hashimoto's thyroid disease**

Myasthenia gravis (MG) (1),

Vitiligo (2,4)

Autoimmune hepatitis (2)

Pemphigus (2)

Rheumatoid arthritis (3,4)

Type 1 diabetes (3,4)

Lupus (3,4)

Addison's disease (4)

Graves' disease (4)

Premature ovarian failure (4)

Pernicious anemia (4)

Thrombocytopenic purpura (4)

Ulcerative colitis (5)

autoimmune atrophic gastritis (6)

chronic autoimmune gastritis (7)

SpondyloArthritis (8)

Sjogren’s syndrome (8)

Celiac disease (8)

alopesi areata (9)

**References**

1. Lin, Yu-Pei et al. “The Concomitant Association of Thyroid Disorders and Myasthenia Gravis.” Translational neuroscience vol. 8 27-30. 30 Apr. 2017, doi:10.1515/tnsci-2017-0006
2. Cojocaru, M et al. “Multiple autoimmune syndrome.” Maedica vol. 5,2 (2010): 132-4.
3. <https://www.mayoclinic.org/diseases-conditions/hashimotos-disease/symptoms-causes/syc-20351855>
4. <https://www.endocrineweb.com/conditions/hashimotos-thyroiditis/hashimotos-thyroiditis-complications>
5. Shizuma T. Concomitant Thyroid Disorders and Inflammatory Bowel Disease: A Literature Review. Biomed Res Int. 2016;2016:5187061. doi: 10.1155/2016/5187061. Epub 2016 Mar 3. PMID: 27042663; PMCID: PMC4794572.
6. <https://www.aem-sbem.com/wp-content/uploads/articles_xml/0004-2730-abem-S0004-27302010000500002/0004-2730-abem-S0004-27302010000500002.pdf>
7. Cellini M, Santaguida MG, Virili C, Capriello S, Brusca N, Gargano L, Centanni M. Hashimoto's Thyroiditis and Autoimmune Gastritis. Front Endocrinol (Lausanne). 2017 Apr 26;8:92. doi: 10.3389/fendo.2017.00092. PMID: 28491051; PMCID: PMC5405068.
8. **Ruggeri, R. M., Trimarchi, F., Giuffrida, G., Certo, R., Cama, E., Campennì, A., Alibrandi, A., De Luca, F., & Wasniewska, M. (2017). Autoimmune comorbidities in Hashimoto’s thyroiditis: different patterns of association in adulthood and childhood/adolescence, European Journal of Endocrinology, 176(2), 133-141. Retrieved May 24, 2022**
9. https://www.frontiersin.org/articles/10.3389/fendo.2020.00543/full

**Myasthenia gravis (MG) (1),**

PTPN22, CTLA4

https://www.frontiersin.org/articles/10.3389/fendo.2017.00169/full

**Vitiligo (2,4)**

TYR, TG, TSHR, AIS1 lokusu (lokus olduğu için bulamadım diziyi), forkhead transcription factor D3 (FOXD3), PTPN22 1858T (rs2476601), FOXP3 mutasyonları, TG/SLA geni

<https://www.spandidos-publications.com/10.3892/etm.2021.9743>

file:///C:/Users/der\_y/Downloads/PDIA\_Art\_22912-10.pdf

https://link.springer.com/article/10.1007/s11154-018-9450-7

**Rheumatoid arthritis (3,4)**

PTPN22 (rs2476601),

HLA-DR B1- Arg74, CTLA4, PTPN22, FCRL3, IL2RA

BTG1

FCRL3,

<https://link.springer.com/article/10.1007/s12026-014-8598-9>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4729856/>

**Type 1 diabetes**

HLA-DRB1-03:01, HLA-DRB1-03:02, HLA-DRB1-04:01, HLA-DQA1-03:01, HLA-DQA1-05:01, HLA-DQB1-02:01, HLA-DQB1-03:01 ve HLA-DQB1-03:02. HLA-DRB1-03:01-DQA1-05:01-DQB1-02:01, HLA-DRB1-04:01-DQA1-03:01-DQB1-03:01 ve HLA-DRB1-04:01-DQA1 -03:01-DQB1-03:02

CTLA4 (c.+6230G>A, rs3087243), CTLA4 (c.49A>G, rs231775), PTPN22 (c.+1858 C>T, rs2476601), PTPN22 (rs2476601), IL2Ra (c.A>G rs10795791),VDR, Bsm I rs1544410; Apa I rs7975232, Taq I rs731236, tümör nekroz faktörü (TNF, c.-863G>A, rs1800630), C-type lectin domain containing 16 (CLEC16A) (rs12708716), erb-B2 receptor tyrosine kinase 3 (ERBB3) gene (rs2292399), the interferon induced with helicase C domain 1 (IFIH1) gene (rs1990760),

CTLA4, PTPN22, IL2RA, CLEA16A, ERBB3, CCR5, CD247, VDR, NAA25, STAT4, INS,

*CAPSL*, *CD226* and *IFIH1*

*https://link.springer.com/article/10.1007/s11154-018-9450-7*

<https://www.frontiersin.org/articles/10.3389/fendo.2021.618213/full>

**Lupus (3,4)**

PTPN22 (rs2476601)

https://www.sciencedirect.com/science/article/pii/S0002929707628687

**Graves' disease (4)**

CTLA-4, PTPN22, HLA-DR3, TSHR, TG, HLA-DRβ1, FOXP3, CD40, IL2RA,

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2949235/

https://www.hindawi.com/journals/jtr/2012/623852/

**Pernicious anemia** (4)

HLA-B8 ve/veya DR3 ve DR5

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5771255/#:~:text=Pernicious%20anemia%20has%20an%20association,%2DDR3%20and%2For%20DR4.

**Sjogren’s syndrome (8)**

HLA-DR3 (DRB1:03:01)

Manuel J. Amador-Patarroyo; Juan Guillermo Arbelaez; Ruben D. Mantilla; Alberto Rodriguez-Rodriguez; Jorge Cárdenas-Roldán; Ricardo Pineda-Tamayo; Mayra R. Guarin; Liliana Lopez Kleine; Adriana Rojas-Villarraga; Juan-Manuel Anaya (2012). *Sjögren’s syndrome at the crossroad of polyautoimmunity. , 39(3), –.*doi:10.1016/j.jaut.2012.05.008

**Celiac disease (8),**

HLA-DQ2 and HLA-DQ8 haplotypes, CTLA-4, CCR5,

<https://tgc.amegroups.com/article/view/4364/5767>

https://link.springer.com/article/10.1007/s10354-021-00879-x

**Hashimoto's thyroids**

CD25, CD40, FOXP3, CTLA4, PTPN22, thyroid stimulating hormone receptor, thyroglobulin, HLA-DR3, DRB1\*04-DQB1\*0301, HLA-DR B1- Arg74, CTLA4 gene +49A/G and CT 60, FoxP3, FoxP3'ün -2383CC polimorfizm,

FOXE1, VAV3, CAPZB, PDE8B, TRIP2, LPP, FAM76B, RNASET2, CCR5, BACH2, ZFAT, SLC26A4, SESN3,

DR5, DQ7 (HLA DQB1\*0301, HLA DQB1\*0304)(dizisini bulamadım), DQw7 (dizisini bulamadım), DRB1\*04, DRB4\*0101, HLA-A2, ve DRw53, VDR, TGF-β, IFN-γ, CYP27B1,

IP6K3

https://link.springer.com/article/10.1007/s10354-021-00879-x

<https://www.frontiersin.org/articles/10.3389/fendo.2021.618213/full>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3271310/>

https://jmhg.springeropen.com/articles/10.1186/s43042-020-00086-0