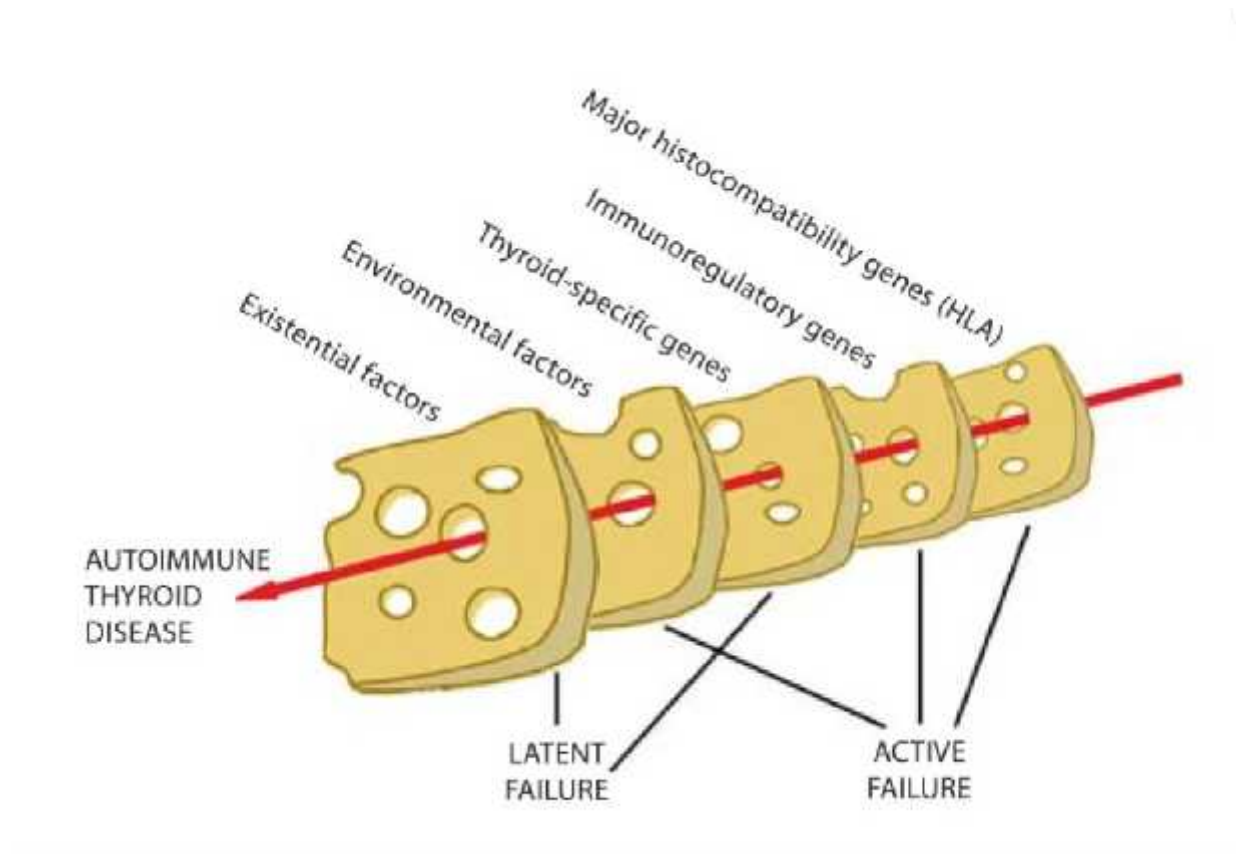


Hashimoto Thyreoiditis der jungen Frau

E. Petnehazy

Immunpathogenese



Eur Thyroid J. 2013 Jan;1(4):243-50. doi: 10.1159/000343834. Epub 2012 Nov 2.

The immunopathogenesis of chronic autoimmune thyroiditis one century after hashimoto.

Weetman AP¹.

Immunpathogenese

Genetische Faktoren:

Major Histokompatibilitätsgene (HLA)

Immunregulatorische Gene (CTLA4, PTPN22, FOXP3, CD40, CD25)

Schilddrüsenspezifische Gene (TSHR, Tg)

Umwelteinflüsse:

Jodzufuhr, Nikotin, Alkohol, Infektionen, Stress, Medikamente, Selen, Zink, Eisen, Vitamin D3, Coenzym Q10, Omega 3-Fettsäuren

Existentielle Faktoren:

Weibliches Geschlecht (X-Chromosom, Frauenhormone), Parität, Alter

Sex differences in autoimmune disease

Nature Immunology 2, 777 - 780 (2001)
doi:10.1038/ni0901-777

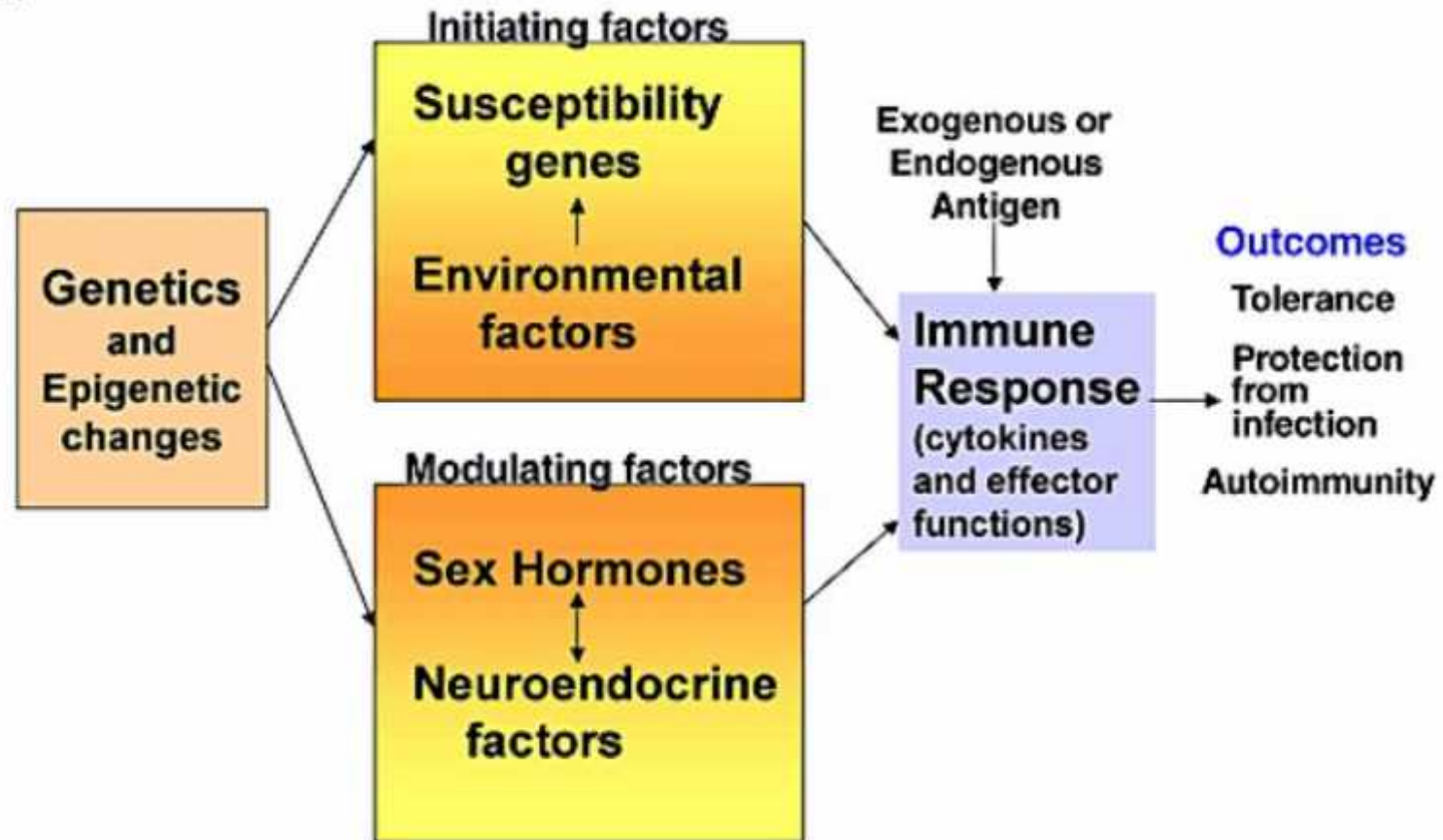


Figure 2. A model for the multifactorial nature of autoimmune disease.

Immunologische Genderunterschiede

In Inzidenz als auch Schweregrad:

Frauen stärkere Immunkompetenz

(höhere Anzahl T-Lymphozyten und zirkulierende Antikörper, IgM Spiegel höher)

X-Chromosom

Genderspezifische Hormone

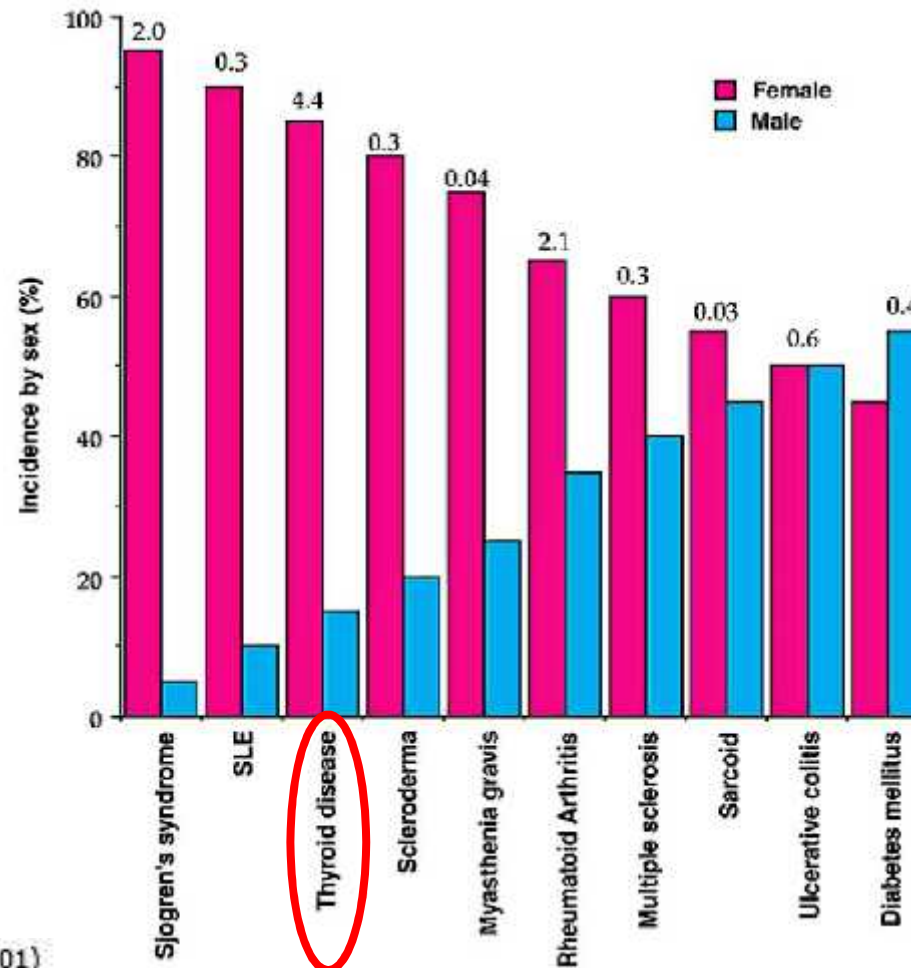
(Östrogen = zytoprotektiv in hohen Konzentrationen

Progesteron, Androgene, Prolactin, orale Kontrazeptiva)

Schwangerschaft/Postpartalperiode/Menopause

Künstliche Reproduktion

Häufigkeitsverteilung



Nature Immunology 2, 777 - 780 (2001)
doi:10.1038/ni0901-777

Figure 1. The sex distribution of the major autoimmune diseases.

Hashimoto Thyreoiditis

Latent
Manifeste Hypothyreose



Junge Frau und Hashimoto

Pubertät

Reproduktionsphase :

Kinderwunsch

unerfüllter Kinderwunsch

(Reproduktionsmedizinische Maßnahmen)

Schwangerschaft

Stillzeit /Postpartalperiode

Predictive THEA score

Thyroid Events Amsterdam score

TSH, mU/L	
<0.4	2
0.4-2.0	0
2.1-4.0	2
4.1-5.7	4
>5.7	6
TPO-Ab, kU/L	
<100	0
100-1,000	4
1,001-10,000	6
>10,000	12
Family members	
2 Members Graves	1
2 Members Hashimoto	3
Maximal score	21

Predictive THEA Score

Thyroid Events Amsterdam score

Low	0-7
Medium	8-10
High	11-15
Very high	16-21

Arch Intern Med. 2008 Aug 11;168(15):1657-63. doi: 10.1001/archinte.168.15.1657.

Prediction of progression to overt hypothyroidism or hyperthyroidism in female relatives of patients with autoimmune thyroid disease using the Thyroid Events Amsterdam (THEA) score.

Streder IG¹, Ijssen JG, Wenzel BE, Enderl E, Wiersinga WM.

Hashimoto Thyreoiditis und Pubertät

Wachstumsstörung Verzögerte Pubertät (Pseudo-)Pubertas praecox

J Pediatr Endocrinol Metab. 2003 Mar;16 Suppl 2:253-7.

Thyroid function and puberty.

Weber G¹, Vigone MC, Stroppa L, Chiumello G.

A. Chiesa, L. Gruñeiro de Papendieck, A. Keselman, J. J. Heinrich, and C. Bergadá, "Final height in long-term primary hypothyroid children," *Journal of Pediatric Endocrinology and Metabolism*, vol. 11, no. 1, pp. 51–58, 1998.

E. A. Jannini, S. Ulisse, and M. D'Armiento, "Macroorchidism in juvenile hypothyroidism," *Journal of Clinical Endocrinology and Metabolism*, vol. 80, no. 8, pp. 2543–2544, 1995.

Gravidität

„targeted case finding“

Ziel: Vermeidung mütterliche Hypothyreose

Prävalenz: 0,3-0,5 % manifest hypothyreot

3-10% latent hypothyreot

Ursache: meist chron. Autoimmunthyreoiditis

20% der Graviden mit Autoimmunerkrankung

entwickeln Funktionsstörung

Targeted case finding

„High risk“ Patientinnen:

Frauen mit vorbestehenden Schilddrüsenerkrankungen

Positiver Familienanamnese

Bekannter Struma

Symptomatisch

Frauen mit bek. Autoimmunerkrankungen (z.B. DM I)

Infertilität

Z.n. Radiatio, Radiojodtherapie, Operation

Nach Abortus oder Frühgeburt in der Vorgeschichte

*Journal of Clin Endocrinology and Metabolism, August 2007; Management of Thyroid
Dysfunction during Pregnancy and Postpartum: An Endocrine Society Clinical Practice Guideline*

Risiko mütterliche Hypothyreose

Abortus

Präeklampsie/ Eklampsie

Frühgeburtlichkeit

Vorzeitige Wehentätigkeit

Gestationshypertonus

Gestationsdiabetes

Intrauterine Wachstumsretardierung

Niedriger Apgar score (< 7/5 min)

Plazentalösung

Vorzeitiger Blasensprung

Vermindertes Geburtsgewicht

Kongenitale Fehlbildungen

Neurologische Defizite

Schwangerschaft

Gelten niedrigere und engere TSH Referenzwerte
(cave Assay-spezifische Variationen !)

Richtwerte zur Orientierung

1. Trimenon	TSH	0,1 – 2,5 mU/l
2. Trimenon	TSH	0,2 -3 mU/l
3. Trimenon	TSH	0,3 -3 mU/l

De Groot L, Abalovich M, Alexander EK et al. Management of thyroid dysfunction during pregnancy and postpartum: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab 2012; 97: 2543–2565

Stagnaro-Green A, Abalovich M, Alexander E et al. Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum. Thyroid 2011; 21: 1081–1125

Schwangere und Jod

Erhöhte Jod-Clearance
Mehrbedarf Schilddrüsenhormon

Unzureichende Jodversorgung ?

Bath SC, Steer CD, Golding J et al. Effect of inadequate iodine status in UK pregnant women on cognitive outcomes in their children: results from the Avon Longitudinal Study of Parents and Children (ALSPAC). Lancet 2013; 382: 331-337

Pessah-Pollack R, Eschler DC, Pozharny Z et al. Apparent Insufficiency of Iodine Supplementation in Pregnancy. J Womens Health (Larchmt) 2013; Oct 12

Raverot V, Bournaud C, Sassolas G et al. Pregnant French women living in the Lyon area are iodine deficient and have elevated serum thyroglobulin concentrations. Thyroid 2012; 22: 522-528

Subclinical Hypothyroidism in Pregnancy: A Systematic Review and Meta-Analysis

Spyridoula Maraka,^{1,2} Naykky M. Singh Ospina,^{1,2} Derek T. O'Keeffe,¹
Ana E. Espinosa De Ycaza,¹ Michael R. Gionfriddo,^{2,3} Patricia J. Erwin,⁴
Charles C. Coddington III,⁵ Marius N. Stan,¹ M. Hassan Murad,^{2,6} and Victor M. Montori^{1,2}

Conclusions

The extant body of evidence supports an association of SCH during pregnancy with multiple adverse maternal and neonatal outcomes, but there is paucity of evidence for the value of levothyroxine therapy to mitigate this association.

Latente Hypothyreose und Schwangerschaft

Screening and subsequent management for thyroid dysfunction pre-pregnancy and during pregnancy for improving maternal and infant health (Review)

Spencer L, Bubner T, Bain E, Middleton P

Authors' conclusions

Based on the existing evidence, though universal screening for thyroid dysfunction in pregnancy increases the number of women diagnosed with hypothyroidism who can be subsequently treated, it does not clearly impact (benefit or harm) maternal and infant outcomes.

Cochrane Database of Systematic Reviews 2015, Issue 9. Art. No.: CD011263.

DOI: [10.1002/14651858.CD011263.pub2](https://doi.org/10.1002/14651858.CD011263.pub2).

Subclinical hypothyroidism in the infertile female population: a guideline

Fragestellung: Oberer TSH Grenzwert 2,5 mIU/l auch bei unerfülltem Kinderwunsch ?

Empfehlung:

laut aktueller Datenlage erhöhtes Risiko für Infertilität, Fehlgeburt und Entwicklungsstörungen bei TSH > 4 mIU/L – daher Substitution empfohlen

Keine ausreichende Evidenz bei TSH 2,5 mU/L – 4 mU/L (bei AK-Negativität)

Fertility and Sterility® Vol. 104, No. 3, September 2015 0015-0282/\$36.00
Copyright ©2015 American Society for Reproductive Medicine, Published by Elsevier Inc.

Latente Hypothyreose und Schwangerschaft

Are we overtreating subclinical hypothyroidism in pregnancy?

BMJ 2015 ; 351 doi: <http://dx.doi.org/10.1136/bmj.h4726> (Published 12 October 2015)

Cite this as: *BMJ* 2015;351:h4726

Clin Chem. 2015 May;61(5):704-13. doi: 10.1373/clinchem.2014.236646. Epub 2015 Mar 31.

Thyroid function in pregnancy: what is normal?

Medici M¹, Korevaar TI², Visser WE², Visser TJ², Peeters RP².

Ärzte = Monster ?!

Widmung

An erster Stelle widme ich dieses Buch den Millionen von Schilddrüsenpatienten, die von ihren behandelnden Ärzten nicht ernst genommen werden und unter zahlreichen Symptomen leiden müssen.

Zweitens widme ich dieses Buch all jenen Ärzten, die es lesen, weil sie ihren Patienten besser helfen möchten.

Drittens, das ist mir ein besonderes Anliegen, widme ich dieses Buch meiner Frau Andrea und meiner Tochter Maizy; sie beflügeln meine Seele und meinen Geist.

Datis Kharrazian, DHSc, DC, MS

„Quality of life“ der Frau

- Vitalität, Leistungsfähigkeit
- Ausgeglichenheit, stabile Stimmung
- Aussehen (Gewicht, Haut, Haare)
- Libido
- Regelmäßiger Zyklus
- Selbstbestimmung bei Kinderwunsch

Hashimoto Thyreoiditis und Quality of Life



Autoimmunity affects health-related quality of life in patients with Hashimoto's thyroiditis

Hilal Bektas Uysal ^{a,*}, Mediha Ayhan ^b

Kaohsiung Journal of Medical Sciences (2016) xx, 1–7

Qual Life Res. 2004 Feb;13(1):45-54.

Health-related quality of life in patients with thyroid disorders.

Bianchi GP¹, Zaccheroni V, Solaroli E, Vescini F, Cerutti R, Zoli M, Marchesini G.

Thyroid. 2011 Feb;21(2):161-7. doi: 10.1089/thy.2010.0191. Epub 2010 Dec 27.

Hashimoto's thyroiditis affects symptom load and quality of life unrelated to hypothyroidism: a prospective case-control study in women undergoing thyroidectomy for benign goiter.

Ott J¹, Promberger R, Kober F, Neuhold N, Tea M, Huber JC, Hermann M.

J Neuroendocrinol. 2008 Oct;20(10):1101-14. doi: 10.1111/j.1365-2826.2008.01774.x. Epub 2008 Jul 30.

The thyroid-brain interaction in thyroid disorders and mood disorders.

Bauer M¹, Goetz T, Glenn T, Whybrow PC.

Clin Endocrinol (Oxf). 2016 Jun;84(6):925-31. doi: 10.1111/ce.12956. Epub 2016 Oct 19.

Sexual function and depressive symptoms in young women with thyroid autoimmunity and subclinical hypothyroidism.

Kysiak R¹, Drusdzol-Cop A², Skrzypulec-Plinta V², Okopien B¹.

Nord J Psychiatry. 2015 Jan;69(1):73-8. doi: 10.3109/08039488.2014.929741. Epub 2014 Jul 1.

Well-being and depression in individuals with subclinical hypothyroidism and thyroid autoimmunity - a general population study.

Ljellegaard K¹, Kvetny J, Allenrup L^{1,N}, Liech E¹, Lillevik G

SF36- Gesundheitsfragebogen

Krankheitsunspezifisches Messinstrument zur Erhebung der gesundheitsbezogenen Lebensqualität

Beschreibung des individuellen Gesundheitszustandes von Patienten und krankheitsbedingte Belastungen

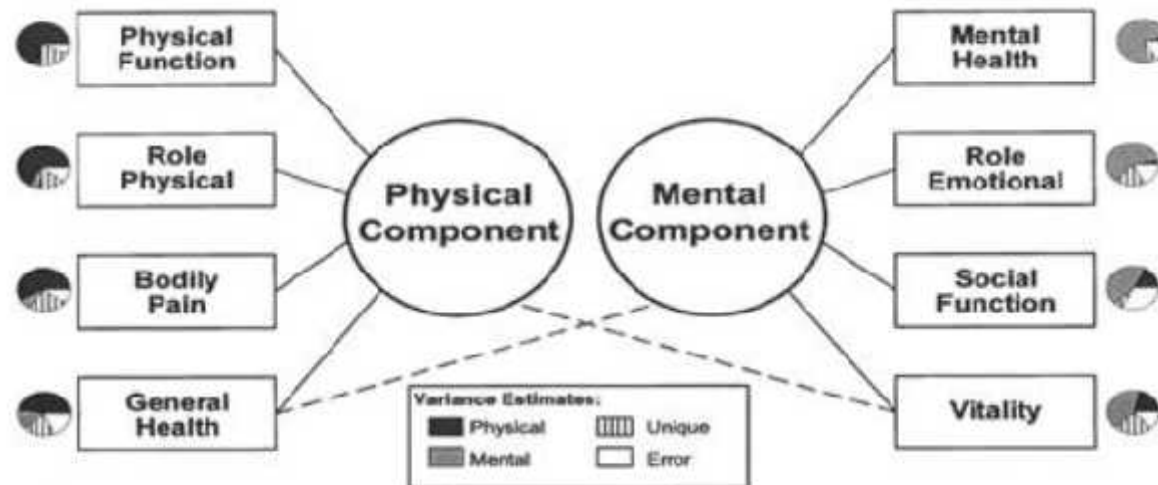


Abbildung 6: Repräsentation physischer und psychischer Komponenten der Gesundheit durch die verschiedenen Subskalen des SF-36 (Ware, 2000).

SF-36 Fragebogen

ORIGINAL ARTICLE

Autoimmunity affects health-related quality of life in patients with Hashimoto's thyroiditis

Hilal Bektas Uysal ^{a,*}, Mediha Ayhan ^b

...our study revealed that higher thyroid antibody levels were negatively correlated with life quality scores. Thus, patients who had higher anti-TPO and anti-Tg levels had significantly lower quality of life domain scores!

Kaohsiung Journal of Medical Sciences (2016), <http://dx.doi.org/10.1016/j.kjms.2016.06.006>

Was tun ?

- **Genetische Faktoren**

Major Histokombtibilitätsgene (HLA)

Immunregulatorische Gene (CTLA4, PTPN22,FOXP3,CD40,CD25)

Schilddrüsenspezifische Gene (TSHR, Tg)

- **Umwelteinflüsse**

Jodzufuhr, Nikotin, Alkohol, Infektionen, Stress, Medikamente, Selen, Zink, Eisen, Vitamin D3, Coenzym Q10, Omega 3, Sexualsteroid

- **Existentielle Faktoren**

Weibliches Geschlecht (X-Chromosom, Frauenhormone),Parität, Alter

Risikoprävention

Modulation of Exposure to Environmental Factors in Order to Decrease the Risk of Developing Autoimmune Thyroid Disease

Preventive intervention	Risk of TPO-Ab	Risk of Hashimoto hypothyroidism	Risk of Graves hyperthyroidism
Stop smoking	Increase	Increase	Decrease
Use alcohol	No change	Decrease	Decrease
Use selenium	?	?	?
Use vitamin D	?	?	?
Avoid pregnancy	Decrease	Decrease	Decrease
Avoid stress	No change	No change	Decrease

[Eur J Endocrinol](#). 2014 Jun;170(6):R241-52. doi: 10.1530/EJE-14-0047. Epub 2014 Mar 7.

Mechanisms in endocrinology: autoimmune thyroid disease: old and new players.

[Efraimidis G](#)¹, [Wiersinga WM](#)².

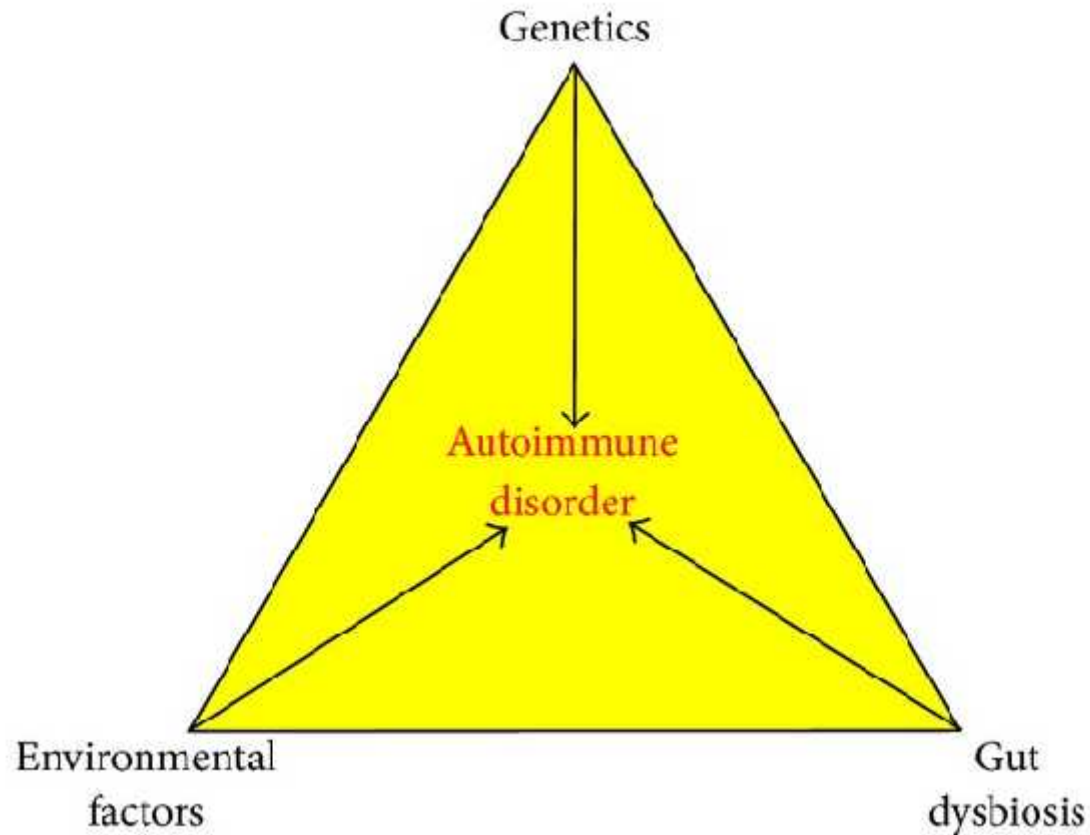
[Endocrinol Metab \(Seoul\)](#). 2016 Jun; 31(2): 213-222.
Published online 2016 May 13. doi: [10.3903/EnM.2016.31.2.213](#)

PMCID: PMC4923404

Clinical Relevance of Environmental Factors in the Pathogenesis of Autoimmune Thyroid Disease

[Wilmac M. Wiersinga](#)²

Autoimmunity and the gut



[Autoimmune Dis.](#) 2014; 2014: 152428.

Published online 2014 May 13. doi: [10.1155/2014/152428](https://doi.org/10.1155/2014/152428)

Autoimmunity and the Gut

[Andrew W. Campbell*](#)

Zöliakie und Hashimoto Thyreoiditis

[Clin Med Res.](#) 2007 Oct; 5(3): 184–192.

doi: [10.3121/cmr.2007.738](#)

Celiac Disease and Autoimmune Thyroid Disease

[Chin Lye Ch'ng](#), MRCPI, [M. Keston Jones](#), MD, FRCP, and [Jeremy G. C. Kingham](#), MD, FRCP

CONCLUSION

Go to:

Patients with CD may present with diverse clinical manifestations, or without symptoms, to specialists other than gastroenterologists. There is ample evidence of a strong association between CD and several immune mediated diseases, including autoimmune thyroid disorders, type 1 diabetes mellitus, primary biliary cirrhosis, inflammatory bowel diseases and autoimmune adrenal failure. Some of these conditions share HLA haplotypes and non-HLA alleles, e.g., CTLA-4, which may underlie their pathogenesis. Thyroid function should be assessed in all CD patients at diagnosis and follow-up if clinically indicated. Relatively cheap serological testing kits for anti-tTG and EmA are available to screen for CD. Screening of high-risk groups such as those with autoimmune thyroid disease is a reasonable strategy. Currently there is little evidence to support a role for a gluten-free diet in reducing the development of associated autoimmune disorders in patients with CD, but early diagnosis and dietary treatment reduces complications such as malabsorption, osteoporosis and lymphoma, and improves the absorption of drugs.

Hashimoto und glutenfreie Diät ?

J Clin Gastroenterol. 2002 Sep;35(3):245-8.

Thyroid-related autoantibodies and celiac disease: a role for a gluten-free diet?

Mainardi E¹, Montanelli A, Dotti M, Nano R, Moscato G.

An association between celiac disease and other autoimmune disorders—such as insulin-dependent diabetes, Addison's disease, systemic lupus erythematosus, rheumatoid arthritis, alopecia areata, and autoimmune endocrine diseases—has been described. The aim of this study was to evaluate the prevalence of celiac disease in 100 patients with autoimmune thyroid disease. Moreover, the monitoring of patients with concomitant celiac and autoimmune thyroid diseases, after a gluten-free diet or a gluten-containing diet, can give important insights into the effect of dietary habits in thyroid autoantibodies modulation. In our study, the prevalence of celiac disease in patients with autoimmune thyroid disease was 2%. In these two celiac patients, the serologic markers became undetectable 6 months after beginning a gluten-free diet. However, thyroid autoantibodies did not positively correlate with dietary habits.

Darmflora - Triggerfaktor für Hashimoto ?

Discov Med. 2012 Nov;14(78):321-6.

Does the gut microbiota trigger Hashimoto's thyroiditis?

Mori K¹, Nakagawa Y, Ozaki H.

Neuropsychiatric disorders

Metabolic diseases

Autoimmune diseases

World J Gastroenterol. 2015 Jan 7;21(1):102-11. doi: 10.3748/wjg.v21.i1.102.

Fecal microbiota transplantation broadening its application beyond intestinal disorders.

Xu MQ¹, Cao HL¹, Wang WQ¹, Wang S¹, Cao XC¹, Yan F¹, Wang BM¹.

Autoimmune Dis. 2014; 2014: 152428.

Published online 2014 May 13. doi: [10.1155/2014/152428](https://doi.org/10.1155/2014/152428)

Autoimmunity and the Gut

Andrew W. Campbell*

Personalisierte Medizin

Regulation des Immunsystems („Immunbalanz“)
Bei Mangel Ausgleich von Vitaminen/Spurenelementen

„lifestyle modification“

Gesunde Ernährung (mediterrane Kost)
Ausdauersport
Ausreichende Schlaf- und Erholungsphasen
Psychosoziale Hygiene

Schilddrüsenhormonwirkung

Adäquate Produktion/ Substitution
Transport Zielorgane
Aufnahme Zielzelle (Resistenz)
Konversion in aktives Hormon

Störungen

bei Insulinresistenz
Nebenniereninsuffizienz
chron. Infektionen