

51 year old woman with hyperglycemia

August 9, 2012

Katie Stanley, MD

HPI

- Diagnosed with DM 1 year prior to visit
- Established primary care at that time due to notable weight loss after tobacco cessation
- Polyuria and polydipsia x 2 mos prior to dx
- Initial blood sugars in 400s per pt
- Started on metformin by PCP

HPI Continued

- Remained uncontrolled on metformin
- Changed to saxagliptin/metformin 1 month later
 - Increased dose
- Added glipizide 5 mg qam
- DM remains uncontrolled with A1c 13.3%
 - >referral to endo
- Reports BGs 200s-300s, improved from 400s at diagnosis

Review of Systems

- Constitutional:
 - ~25 lb weight loss at diagnosis, no further wt loss, but has not regained;
 - Overall feels better than when first diagnosed
- HENT:
 - Dental infection
- Eyes: Negative.
- Respiratory: Negative.
- Cardiovascular: Negative.
- Gastrointestinal:
 - Negative for N/V, abdominal pain
- Genitourinary:
 - Continued polyuria, nocturia though reports improvement from diagnosis
- Musculoskeletal: Negative.
- Neurological: Negative.
- Hematological: Negative.
- Psychiatric/Behavioral: Negative.

Past Medical History

- Diabetes Mellitus
- Abnormal TSH
 - 4.63 1 month prior to visit

Family History

➤ Diabetes

- Brother and 2 maternal aunts
- Brother diagnosed in 40s, overweight
- Aunts not overweight
- All on pills, not sure if controlled

➤ Lupus

- Sister

➤ Thyroid disease

- Negative

Social History

- Has 2 grown children
- Works in maintenance at Walmart
- Quit smoking 1 year ago
- No alcohol or illicit use

Physical Exam

- HR 78, BP 101/63
- Wt 51.6 kg, Ht 160 cm, BMI 20.2
- Pt reported maximum wt 140 lbs->BMI 24.8
- General: Well-appearing but thin
- HEENT: MM mildly tacky, nl thyroid without nodules
- Lungs: CTAB
- CV: RRR, no m/r/g
- GI: Soft, NT/ND
- Ext: No edema
- Skin: No acanthosis, no skin tags

Labs

- Na 134, K 4.1, Cl 101, HCO₃ 22, BUN 14, Cr 0.7, Glu 400, Ca 9.1
- C-peptide 0.27
- TSH 5.77, FT4 0.80, total T4 5.7, T3 75, reverse T3 213, TPO Ab 20480, Tg Ab Negative
- Insulin Abs Negative
- GAD65 Ab 1.07

Course

- Started on insulin regimen
 - TDD 0.5 U/kg/day
 - Lantus 12 units, Novolog 4 units qac +1:75>200
- Return visit 1 week later
 - Checking BG 4x/day: 88-189
 - Energy and overall well-being much improved
 - Gained 5 lbs
 - Decreased urination and thirst

Further Labs

➤ Lipid panel

- Total 132, HDL 83, LDL 44, TGs 23

➤ Adrenal insufficiency?

- Cortisol 12.0 (7:13 am)
- ACTH 25.7
- Adrenal Ab negative

WALL STREET JOURNAL

HEALTH & WELLNESS

August 6, 2012, 7:01 p.m. ET

Wrong Call: The Trouble Diagnosing Diabetes

By [KATE LINEBAUGH](#)

With cases of diabetes growing each year, many adults are getting caught in a potentially dangerous situation: they are diagnosed with Type 2 diabetes when they actually have Type 1 diabetes, a substantially different condition.

Latent Autoimmune Diabetes of Adulthood (LADA)

➤ Criteria

- Age greater than 30
- Antibody positivity
- Not treated with insulin within 6 months of diagnosis

➤ Epidemiology

- 2-12% of all cases of diabetes
- 3.6% newly diagnoses cases apparent type 2 in UK

➤ Ketosis prone?

➤ Insulin resistant?

Treatment of LADA- Cochrane Review 2011

➤ Primary outcomes

- Complications: No studies
- Metabolic control: Meta-analysis showed 1.3% difference in A1c in insulin vs. SU+/-met
- Progression to insulin dependence: Higher with SU tx

➤ Secondary outcomes

- C-peptide: Greater decline from baseline in SU vs. insulin, higher C-peptide in insulin + rosiglitazone vs. insulin alone, higher C-peptide at 24 wks in pts treated with GAD65 compared to placebo
- Health related QOL, health service utilization: no studies

Thyroid autoimmunity is associated with GAD titers

- Study of Chinese subjects with Type 1 DM and LADA
- Antibody positivity
 - 21.5% in LADA subjects (27.4% in DM1)
- Thyroid dysfunction
 - 11.1%->15.3% in LADA subjects
- GAD65 titer
 - GAD65 titer>175 U/mL associated with much higher prevalence of thyroid autoimmunity
- Thyroid autoimmunity associations in LADA
 - Higher prevalence of thyroid dysfunction, lower fasting C-peptide, higher GAD titers
 - Higher frequency HLA-DQA1*03-DQB1*0401

Adrenal antibodies

- Journal of Endocrinology 1999
 - 15 positive->6 developed Addison's disease over 6 months-10 yrs
 - 51 negative->49 persistently negative and adrenal fxn remained nl, 2 became positive, 1 developed adrenal dysfxn
- 21-OH antibodies more predictive than adrenal cortex antibodies
- Children with + adrenal antibodies more likely to develop adrenal dysfunction than adults

References

- Betterle, C et al. Adrenal cortex and steroid 21-hydroxylase autoantibodies in adult patients with organ-specific autoimmune diseases: markers of low progression to clinical Addison's disease. *J Clin Endocrinol Metab.* 1007: 932-8.
- Betterle, C et al. The natural history of adrenal function in autoimmune patients with adrenal autoantibodies. *J Endocrinol.* 1988: 467.
- Brophy S et al. Interventions for latent autoimmune diabetes (LADA) in Adults. *Cochrane Reviews.* 2011: 1-73.
- Djekic, K et al. Latent autoimmune diabetes of adults is phenotypically similar to type 1 diabetes in a minority population. *J Clin Endocrinol Metab.* 2012: E409-412.
- Jin, P et al. High titer of antiglutamic acid decarboxylase autoantibody is a strong predictor of the development of thyroid autoimmunity in patients with type 1 diabetes and latent autoimmune diabetes in adults. *Clinical Endocrinology.* 2011: 587-92.
- Ramachandra, GN et al. Latent autoimmune diabetes in adults. *J Clin Endocrinol Metab.* 2009: 4635-4644.