Lupus with Grave's disease: Overlap Disease vs Drug Induced Lupus; A Case Report & Review of Literature

Kaitlin E. Smith, (M3; Presenter)[1], Bert E. Bachrach[1].MD.
[1]University of Missouri-School of Medicine, Columbia, Missouri

Background

Graves' disease is one of the T-Cell mediated organ-specific autoimmune thyroid diseases, while SLE is mainly a B-Cell mediated autoantibody regulated systemic autoimmune disease. There is a well-established association of hypothyroidism, autoimmune thyroiditis, and thyroid cancer to systemic lupus erythematosus in age and sex matched controls in diverse populations across the world. The association of SLE and Graves' disease is extremely rare in adults and has never been reported in the pediatric population. This case report suggests that pediatric patients with thyroid disease or systemic lupus erythematous should be evaluated for one another on the presentation of either.

Case

Initial Graves' presentation

HPI: 11-year-old Caucasian female presented with tachycardia, weight loss, and polyuria.
PMH: Constipation & colic (family attributed to gluten intolerance), multiple URIs, seasonal allergies
Medications/allergies: Currently on medications, NKDA
Family history: bipolar disorder, schizophrenia, hypertension, multiple maternal family members with type 1 DM
Labs & treatment: T4 elevated and TSH low. With the suspicion of hyperthyroidism, she was started on 10 mg propranolol every eight hours to avoid thyrotoxicosis and referred to endocrinology. At this time she did not have any additional signs of autoimmune disease.
Thyroid antibodies came back positive at 22 IU/L and 5.2 TSI index, while the celiac panel was negative (on gluten-free diet). A radioiodine uptake was consistent with hyperthyroidism due to Graves' disease. Medical therapy was decided upon and the patient was started on Tapazole 10 mg three times daily while continuing propranolol.

Lupus presentation & disease course

HPI: 3 weeks later the patient returned with symptoms shown in table 1
Labs: positive for elevated ESR, CRP, RNP, anti-Smith, ANA (1280:1) speckled pattern, and elevated C3.
Treatment: Tapazole was discontinued. 15 mg methotrexate once per week and 50 mg/day of oral prednisone with a weekly taper to finish over 4 weeks were initiated. She later had thyroid radioablation.
Course: Her SLE symptoms have continued to improve on treatment except for one relapse due to a misunderstanding and discontinued methotrexate. Presently, she is on 5 mg Prednisone once a day, methotrexate 15mg /week and hydroxychloroquine 6 mg/kg/day.

Table 2: Disease timeline

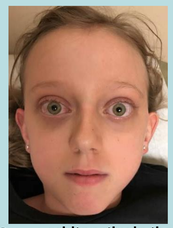
Day	Significant events dates	ESR (normal range 0-13mm/hr.) Wintrobe	CRP (normal range 0-0.5 mg/dl)
Day 1	Diagnosed with GD	10	0
Day 7	Tapazole started 10 mg 3 times daily		
Day 28		69	2.7
Day 31		80	2.38
Day 34	Diagnosed with Lupus oral steroids started at 1.5 mg/kg tapering over 4 weeks 15 mg methotrexate per week		
Day 37		75	1.19
Day 43		20	0.4
Day 58	Tapazole discontinued		
Day 64		6	0.4
Day106		8	0.4

Table 3: Thyroid lab trend over time

Day	T4 (mcg/dL)	T3 total (ng/mL)	Free thyroxine (ng/dL)	3rd generation TSH (mcunit/mL)	Triiodothyronin (pg/mL)
Day 1	19.8	-	7.68	0.005	25.2
Day 2	-	-	-	-	-
Day 22	13.5	-	3.21	0.005	-
Day 35	16.1	-	3.32	0.005	-
Day 36	-	-	-	-	-
Day 37	-	-	-	-	-
Day 45	-	-	-	-	-
Day 51	24.3	-	>7.77	0.005	-
Day 66	22.3	5.1	7.77	0.005	-
Day 72	-	4.1	-	-	-
Day 84	18.4	2.7	4.89	0.005	-
Day 98	17.9	2.5	5.10	0.005	9.6
Day 113	24.8	-	7.77	0.005	28.5

Table 1: SLEDAI score

Score	Present	Descriptor
8	0	Seizure
8	0	Psychosis
8	0	Organic Brain Syndrome
8	8	Visual Disturbance
8	0	Cranial Nerve
8	8	Lupus Headache
8	0	CVA
8	0	Vasculitis
4	4	Arthritis
4	4	Myositis
4	0	Urinary Casts
4	0	Hematuria
4	0	Proteinuria
4	0	Pyuria
2	2	New Rash
2	2	Alopecia
2	2	Mucosal Ulcers
2	0	Pleurisy
2	0	Pericarditis
2	0	Low Complement
2	2	Increased DNA binding
1	1	Fever
1	0	Thrombocytopenia. <100,000
1	0	Leukopenia < 3000/mm3
105	33	TOTAL SCORE



Graves orbitopathy in the patient

Skin changes in the patient

Literature review: Thyroid disease & lupus; past 50 years of data

Study group PMID	Age	Sex M;F	Co-present	Thyroid Disease first	SLE first	Interval between diseases	Hyper-thyroid	hypo-thyroid	ANA titer	ANA pattern	RNP	ANCA	Anti dsDNA	Anti Smith	Serositis	Carditis	Nephritis	CNS	Malar rash	Muco-cutaneous lesions	Photo sensitive /discoid rash	Arthritis	Lymph -adeno -pathy
Our patient	11	0;1		+		0.9 years	+	-	+	speckled	+	+ PR3	-	+	-	-	-	-	-	+	-	+	+
26462542	15% 20-39 37% 40-59 48% 60-110	18;112					130	0															
6896490	23	0;1		+			+	-	+	Shaggy & speckled			+			-	-	-	-	+	-	+	+
11779764			3	10	9		5	17															
Wang	21-42	2;12	3	8	2	Avg 4.14 yrs	9*	3	+ 12/14				14		3	1	7	1		13		12	3
22937453	29-44	0;4	1	3		Avg 2.1 yrs	4	0	+ 3/4		-		+ 2/4	+ 1/4	1	1	0	0	1	0	1	1	0
2730168	23-41	0;6	2	3	1	Avg 2.9 yrs	6	0	+ 6/6				+ 4/6		4	4	5	1	1	2	2	6	
Diagne	52	0;1			+	1.83 yrs	+	-						+	+							+	

*2 patients had subacute thyroiditis

Recommendations

- Routine thyroid function tests should be conducted in SLE patients.
- AITD patients should be evaluated on the slightest suspicion of autoimmune systemic involvement, and appropriate referrals should be made early in the disease.
- Consideration should be taken for drug choice in the treatment of thyroid diseases or SLE since the drugs can mask, alter, or even induce the symptoms of either disease.