Six Things That Changed How I Manage Graves’ Disease

Anthony DeWilde, OD FAAO

Kansas City VAMC
6 Things

1. Thyroid status
2. Pathogenesis
3. Ocular signs/symptoms
4. Labs
5. Smoking
6. Mental Health
Graves’ Disease

Autoimmune

Affects:
- Skin
- Thyroid
- Orbit
- Psych
What Graves' Is Not

NOT a Thyroid disease
It IS autoimmune affecting
  Skin
  Orbit
  Thyroid
  Psych
Graves’ Disease

Also goes by
Thyroid Associated Ophthalmopathy
Thyroid Eye Disease
Graves’ Ophthalmopathy
Graves’ Dysthyroid Ophthalmopathy
Skin

Pretibial myxedema (1-4%)
Thyroid

80% are Hyperthyroid
Sweat, tremor, weight loss

10% are Hypothyroid
Cold, weight gain, hair loss

10% are Euthyroid

Best Practice & Research Clinical Endocrinology & Metabolism 26 (2012) 273-279
30-50% of Graves’ patients have orbitopathy

2-5% serious complications
Psych

Affects up to 1/3 of Graves' patients

Attention

Mood

Anxiety

Graves' Manifestations

- Skin
- Psych
- Orbit
- Thyroid
Untreated Graves'

Can lead to

- Heart problems
- Fragile bones
- Psychotic changes
- Pregnancy complications
- Coma
- Death
Graves' Orbit Thyroid Vicious Cycle

Thyroid

Orbit
Autoimmune

Increased antithyroid antigens
TSH receptor antibodies
Increased T3, T4
Decreased TSH
Autoimmune

Increase in

CD4
CD8
B cells
Macrophages
Autoimmune

Increase in
Fibroblasts
Hyaluronic Acid
Collagen
Adipose

This leads to further inflammation

Diagnosis

May come to office with diagnosis

How do we diagnose new Graves’ Disease?

Appearance
Symptoms
Labs
Imaging
Appearance

Stare
Eyelid retraction
  Up to 90% of patients
Caruncle, eyelid edema
Caruncle, eyelid, conjunctival redness
Rarely: optic nerve disease
  Edema
  Atrophy
  Glaucoma
Optic Nerve Compression
Optic Nerve Compression

Ophthalmology 2012;119:2174–2178
Appearance

Exophthalmos

Hertel

Asian upper limit = 18
White upper limit = 21
Black upper limit = 24
Symptoms

Dry eye

Ache – rest or movement

Blur

Diplopia
Labs

Free T3 and T4

TSH

Anti-thyroglobulin (TSI)

Thyrotropin-Binding Inhibitory Immunoglobulin (TBII)

Refer to Endocrine
Imaging

CT allows measurement of
Orbital fat
Lacrimal gland
Extraocular muscles

Have to get before orbital decompression
Imaging

MRI
Better soft tissue evaluation
Best to monitor serially
Preferred imaging strategy
Classification

NO SPECS

VISA

EUGOGO
NO SPECS

Not beneficial
Grading is loosely defined
Does not document progression well
Little insight into function or treatment
VISA

Vision/Optic Neuropathy
Inflammation/congestion
Strabismus/motility
Appearance/exposure

Descending order of importance
Easier documentation
EUropean Group of Graves’ Orbitopathy

Similar to VISA

Extensive documentation
Thyroid Treatment

Stabilize Thyroid if necessary
Thyroid medication
Thyroidectomy
Radioactive iodine therapy
Thyroidectomy has never been proven effective

Radioactive iodine
  Can exacerbate orbitopathy in 20%
  Need 6 week low dose steroid

Medication
  Anti-thyroid meds
  Thyroid replacement meds
Other Systemic Tx

May use Beta Blockers

Controls symptoms
Ophthalmic Treatment

If Graves’ is active (usually lasts 6-18 mo)
  Oral and/or IV steroid
  Stabilize inflammation
  Prevent further swelling
Ophthalmic Treatment

Lubrication

Surgery
  Orbital decompression
  Strabismus
  Eyelid retraction
Lubrication

Treat dry eye

Treat exposure keratopathy

Consider ointment qhs if lagophthalmos
Orbital Decompression

Stabilize first

Not first line

Must perform if optic nerve damage

Strabismus is a common side effect (up to 60%)

Strabismus

Stabilize first

May try prism first
Eyelid Retraction

Relaxation of levator

Helps with cosmesis and symptoms

May need re-operation (up to 25%)
Skin
Thyroid
Psych
Eye
Exophthalmos/Lagophthalmos
Dry eye
EOM/Diplopia/Pain
Compressive Optic Neuropathy
Glaucoma
Goals for Management

**Active**
- Stabilize - Thyroid & Inflammation
- Comfort
- Optic Nerve

**Inactive**
- Comfort
- Monitor
Psychiatric Treatment

High rate of depression

Need to consider quality of life
Team Approach

Endocrinologist

Primary Care

Ophthalmology
  Neuro
  Plastics

Mental Health
Smoking

Worse progression
Worse prognosis

Study:
Non-smokers - 61/65 (94%) benefited from Tx
Smokers - 58/85 (68%) benefited from Tx

6 Things

1. Thyroid status
2. Pathogenesis
3. Ocular signs/symptoms
4. Labs
5. Smoking
6. Mental Health
Patient Example

50 year old male

Complains of:

- Diplopia
- Swollen Eyelid OS
- Red Eye OS
Exam

20/25 OD and OS
IOP 18/18
No APD
Diplopia in lateral and downgaze
Pain in lateral gaze
Exam

Exophthalmos OS
Hertel 19/23
Lagophthalmos
Conjunctival edema and injection
Eyelid edema
Labs

TSH = 0.003 (normal = 0.47-5.00)

T4 = 20.3 (normal = 4.5-12)
Referral

Endocrine

Oculoplastics

Inform PCP of findings
5 months later

IOP 18/24

? APD OS

Start IOP Timolol 0.5%

Start Oral Pred (40 mg)
<table>
<thead>
<tr>
<th>Date</th>
<th>Threshold</th>
<th>Time Open</th>
<th>Time Closed</th>
<th>Total Deviation</th>
<th>Future Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-14-2011</td>
<td>3A-Standard</td>
<td>9/3</td>
<td>19/3</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>02-22-2011</td>
<td>3A-Standard</td>
<td>9/3</td>
<td>19/3</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>02-24-2011</td>
<td>3A-Standard</td>
<td>9/3</td>
<td>19/3</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>02-24-2011</td>
<td>3A-Standard</td>
<td>9/3</td>
<td>19/3</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

Power: CTF
MD: 6.20 dB P < 0.5%
PSE: 5.90 dB P < 0.5%

VT%: 92%
GI: 6/20
PN: 10%
TP: 0%

VT%: 98%
GI: 6/19
PN: 4%
TP: 0%

VT%: 97%
GI: 6/19
PN: 6%
TP: 0%

VT%: 97%
GI: 6/20
PN: 2.00 dB
TP: 0%
6 months later

IOP as high as 38/28
Oral Pred now 80 mg
+ APD OS
IOP 19/19 on Travatan, Cosopt, Alphagan
Refer for Orbital Decompression
After Orbital Decompression

Develops Diplopia

But...IOP 12/14 on meds
Last month

Now S/P:

Orbital Decompression
Strabismus Surgery
Eyelid Retraction

Now has 20/80 cataract
Thank you!

anthony.dewilde@va.gov