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KOL Knockout™: Endocrinology Edition – Thyroid Titans Clash to Enhance Outcomes in Thyroid Eye Disease *Round 1*

### Announcer Open:

Welcome to CME on ReachMD. This replay of a live broadcast, titled “KOL Knockout: Endocrinology Edition – Thyroid Titans Clash to Enhance Outcomes in Thyroid Eye Disease Round 1,” is provided by Evolve Medical Education, and is supported by an unrestricted educational grant from Horizon Therapeutic.

### Dr. Gupta:

Good evening, everyone. So today we're going to be doing a knockout, Endocrinology Edition for thyroid eye disease. I would like to introduce the contestants. Uh, Dr. Rokshana Thanadar, Dr. Anupam Kotwal and Dr. Ela - Alireza Falahati. Dr. Alirazi – uh, Alireza Falahati is now practicing endocrinology in Salt Lake City, Utah. Dr. Anupam Kotwal has been practicing at the University of Nebraska Medical Center, and Dr. Rokshana Thanadar practices all over the country but is based out of Chesapeake, Virginia. Staff planners and reviewers here have no financial relationship. Evolve has full policies in place that will identify and mitigate all financial relationships prior to this educational activity. There are some learning objectives: we are going to be discussing thyroid eye disease today, based on clinical exam and appropriate testing; enable the assessment and of disease activity, severity and impact on the quality of life; appraise the risk-benefits profile of medical and biological therapies for thyroid eye disease; devise individual treatment plans for patients with varying degrees of thyroid eye disease, activity and severity that prevent disease progression; we're going to establish a referral and co-management protocol and ensure patient access in specialized, collaborative care.

Okay, so let's begin. Alright, so we're going to start with Case 1. And in Case 1 we have a 56-year-old female with Graves disease. The thyroid stimulating immunoglobulin was 60 times normal. She's a nonsmoker. She's never had a history of radioactive iodine. She was treated with Lugol's solution and methimazole, then had a thyroidectomy for a large, compressive goiter. Alright, first question: What do you see? I'm going to start with you, Dr. Thanadar.

### Dr. Thanadar:

Well, she does have some proptosis, so it's more of an observation as opposed to a measurement.

### Dr. Gupta:

Okay. Dr. Kotwal, what do you see?

### Dr. Kotwal:

Yeah, so, in addition to the proptosis, there's also – appears to be eyelid retraction. We can see the corneal exposure there in the superior aspect. And at least there is some periorbital edema as well that I notice here.

### Dr. Gupta:

Dr. Falahati, what do you have to add?

### Dr. Falahati:

You know, I also notice that her right eye is a little bit deviated. It's not really very focused, and deviated to the lateral. Um, which could be a potential cause of double vision in this patient, even without looking laterally. But otherwise, I agree with everything else. I can't see

anything else other than just the deviation of the right eye to the lateral movement.

**Dr. Thanadar:**

There does seem to be a slight asymmetry. Her right eye does seem to be a little more protruding than the left.

**Dr. Falahati:**

Yeah, definitely, yeah.

**Dr. Gupta:**

Alright, so we're going to talk a little bit about the ocular signs and symptoms in this case. Um, she did have right eye diplopia or double vision. She had some redness of the lid. She also had dry eye. She had some headaches and pain behind her right eye. She had no difficulty driving or walking. She had seen ophthalmology in 2014. Had a history of retinal bleed and was referred to a retina surgeon. She received injections at that time, but had no diagnosis of thyroid eye disease. So, what's your diagnosis? Dr. Falahati, I'm going to start with you.

**Dr. Falahati:**

So, the diagnosis, obviously thyroid eye disease, based on also the background information we got. And the treatment would be literally eye work with ophthalmology, so I would refer them to ophthalmology for just a baseline evaluation. But it's pretty obvious she has thyroid eye disease.

And I would consider, as my first line therapy – depending on the insurance, of course, but I would ideally would like to treat with Tepezza, but the methylprednisolone would be potentially an option as a pretreatment, or pre-Tepezza treatment, to get the insurance – make the insurance happy. And again depending on I don't know, I would like to see an MRI of her eyes, and then work with an ophthalmologist on that, in that area.

**Dr. Gupta:**

Dr. Kotwal, what about you?

**Dr. Kotwal:**

So for the diagnosis, I mean, this appears to be thyroid eye disease. There is some other differential we do want to consider, if there is significant, like, unilateral disease. But this appears to be bilateral even though one side is more pronounced. I think I do agree with, you know, the imaging can help if there are other potential causes, but also to, kind of plan. Um, this appears to be – you know, based on the symptoms at least moderate to severe, and so she does need kind of, somewhat of a urgent assessment in terms of co-management, so eye specialists assessing the – I think I can, I guess, focus on diagnosis treatment, like the visual acuity would do a confirmation with a Hertel's ophthalmometer, and things like that. As far as treatment, co-management – yeah, I mean, we would discuss these options. We would also want to, kind of, assess her quality of life. I know she's complaining a few things but, you know, really ask how much is it bothering her and how much, you know is it affecting her quality of life. And discuss therapeutics. I agree with the plan that Dr. Falahati was mentioning. We – I think there's a reasonable to consider teprotumumab here. But that would require some more testing, screening for, you know, glycemic issues and things like that. Yeah.

**Dr. Gupta:**

Dr. Thanadar, what do you think?

**Dr. Thanadar:**

So, I agree. You know thyroid eye disease definitely is high on her differential diagnosis. Just because she's had her thyroid disease treated, per se, doesn't necessarily mean that there still wouldn't be a presence of – of thyroid eye disease for her. And so that definitely would be high on the list. I agree with Dr. Kotwal in the fact that you do need to make sure that you can rule out, or rule in, other things that may have similar presentations as thyroid eye disease does. As far as treatment, you know, part of it would be to say, again, how much is this affecting her quality of life? How much is it affecting her ability to do things? I know it did say that, you know, she has been able to drive, but there may be more subtle things that are going on that may be things that she's adapted to, but are now ac – but actually are causing issues with the way she's able to carry on her daily activity.

You know doing more measurements to get a little objective numbers and to get some objective information would help to be able to kind of determine then, how extensive, how conservative or how aggressive treatment needs to be. She may be able to only need things that are kind of supportive, and help with the symptoms. You know, it can be simply – as simple as – as drops, but also just kind of given her, kind of, the imaging, she may have more issues than just dry eye that goes along with that, and so I agree that a referral to an ophthalmologist if she hasn't seen one would be of benefit, to see more on the degree of what's going on with her vision, and going on with her acuity to see if then further treatment, whether it be medical or whether it be surgical, would be appropriate for her. I think at the moment, it's kind of hard to say where we would go. Right now, it would be a lot of information gathering to see what we need to do

next.

**Dr. Gupta:**

That's a great point. I will – I'm going to ask you guys some questions because we are endocrinologists, our approach is very different. Do you guys calculate a CAS score when you're seeing patients?

**Dr. Thanadar:**

I didn't realize...I didn't realize that I do, in some aspects. It is to ask some of the information that comes in the CAS score. And it may not be all elements of that to actually fully calculate it, especially if they don't have a lot of issues. If – if the – if their score is low in the 1 or the 2, I may not proceed with some of the further questions, because it would be kind of obvious – maybe not, but maybe a little more obvious that some of the more severe aspects of thyroid eye disease don't exist there.

**Dr. Kotwal:**

Dr. Gupta, your question was what are our thoughts on that?

**Dr. Gupta:**

Yes, do you use the CAS score?

**Dr. Kotwal:**

I would calculate CAS scores to, kind of, somewhat assess the – how much inflammation activity is going on. But understand a little bit of its limitations, in that, you know, it doesn't capture the issues with quality of life, the – the worsening that happens with, you know, concentrating on the computer, or like focusing on them – some things. And the other point being that not every, kind of, component of the CAS score – they – they all get kind of graded similarly so it doesn't provide the full picture. I do think it's helpful to get some idea but there are patients with a low CAS score, who would have like still, kind of, diplopia or maybe they had chronic disease and now it's kind of recurring and fluctuating.

So the answer is yes, but also look at other measures, in addition to that.

**Dr. Falahati:**

I agree with Dr. Kotwal. We do use CAS score, but I really put a lot of weight on additional clinical information, and also feedback from the ophthalmologist at the end of the day. Um, so we do take it into account, and in terms of how urgent the situation is, but it's not the only score that we go by – kind of like TI-RADS score. Uh, for the thyroid nodules they're helpful but at the end of the day, you need the biopsy. So, in this case, we I put more weight on the feedback from the ophthalmologist, and of course, additional symptoms the patient may have and other findings.

**Dr. Gupta:**

Great. So, if you look at her past history, she has seen ophthalmology in 2014. And she did have many of the same symptoms. Why do you think they missed the thyroid eye disease at that time?

**Dr. Thanadar:**

I think a lot of times can be misconceptions that because she's treated Grave's having had a total thyroidectomy that there may be an idea that it's low on the differential, that no longer would she have, issues of thyroid eye disease, because the – kind of, the older paradigm was that you have an active state, and then you float down into an inactive state, and that once you're in that inactive state it really isn't of a consideration. And we kind of now know that there is some variability, recurrence and fluctuations, and just because your – you thyroid, or you treated for your thyroid disease doesn't necessarily mean that thyroid eye disease isn't something that is – that's potential, because in a – in some aspects, they're kind of two separate things.

**Dr. Kotwal:**

I agree with that completely. I think that probably could be the reason. Could also be that they just were not aware of that – that history. But yeah. I – just keeping in mind that people could be euthyroid, or hypothyroid, or may actually not have had a clear diagnosis of Grave's disease, right. There are a percentage that ha – will have thyroid eye disease so really do that antibody testing and, you know, clinical suspicion and other testing to make the diagnosis would be needed.

**Dr. Falahati:**

I agree completely with both of a – our colleagues here and I think it was an earl –emergency or urgent setting. She was act – having active bleeding. The focus was on the retinal hemorrhage and treating it, and not necessarily looking at s – outside the eyeball. If you do it can be missed in an acute setting, of course, when they have to deal with conditions that are not necessarily typical for Grave's disease.

**Dr. Gupta:**

Okay, so we're going to move on. I'm going to tell you what I did. So I referred her to Oculo-Plastik, who actually did not think she needed any treatment. Do you agree?

**Dr. Thanadar:**

I think that, you know, it may be in the aspect of what you – what you do. And, you know, Oculo-Plastik is going to be looking more at a surgical intervention as opposed to maybe the medical intervention and from their standpoint, if she's been stable and she's not having any symptoms, and it's not necessarily affecting any of her – any kind of gross aspects of daily activities, they may feel that there isn't much benefit she may have from a surgical intervention. That doesn't necessarily mean that there isn't treatment for her that could actually help, maybe, with, you know, reduction of some of her proptosis, which then, in turn, can help with some of the other issues that come with that – corneal dryness and dry eyes and itchy eyes, which those tend to be – even though they seem like they're, you know, especially like itchy eyes and dry eyes, seems like that may be not be, oh, that big a deal. Nobody's going to die from that, per se, but it does certainly affect your quality of life. You know, if any of us have ever had that aspect of, you know, getting something in your eye, or feeling a grain of sand in your eye, or – or, you know just even seasonal allergies, that's miserable and it only lasts for a short period of time. These patients are having that 24/7, so you can imagine what that does to somebody's quality of life. So, even if a lifesaving or a life-threatening issue isn't there, there are still things that, you know, quality of life treatment – other treatments may be able to be helpful.

**Dr. Falahati:**

I absolutely agree, and also, there are a lot of other factors that again play a role in terms of assessing the quality of life, including her – her profession – job. What does she do? How much is she using her eyes in front of a screen, or is how often or how much time does she spend being in, I don't know, around people and not feeling comfortable being looked at with these asymmetric eyes and bulging eyes? So aside from the cosmetic part of it, the practical part of it – what does she do? Is she using her eyes, really? Then the diplopia will play a huge role. It may not be a surgical emergency, or surgically indicated or surgical intervention needing case right now, but I think there is still quite a few aspects that lead to a quality of life issue, needs to be considered.

**Dr. Kotwal:**

Yeah, I mean, I completely agree. I mean, she doesn't have, like, you know, a lot of redness or edema and things like that, but given the symptoms, I – you know, looking at her quality of life and what how much the symptoms are affecting her.

I mean, this is where we would consider – and – and kind of looking back, how has the disease been doing? If she's having these flares, or this has been somewhat worsening, I think this is reasonable to con – still consider treatment, although nonsurgical in this scenarios would be reasonable.

**Dr. Gupta:**

Okay, great. I'm going to move on to case number 2. So, in this case is a 73-year-old female, was referred to me with a history of Grave's disease. She has a long-standing history of Grave's disease where she got iodine-131 – radioactive iodine – back in the 1970s. And that was followed by orbital decompression surgery in 1980 in California. She has a past history of congestive heart failure, COPD, type 2 diabetes, hypertension. She is on levothyroxine. She's never had steroids. She is currently not on steroids, and has been on amlodipine and oxybutynin. Her mother had Grave's disease with thyroid eye disease. So this is case 2. I'm going to ask you guys – what do you see? I want to start with you, Dr. Kotwal.

**Dr. Kotwal:**

Sure. So again, you know, there is definitely proptosis. There is periorbital edema. there is conjunctival injection, especially on that left side, lateral. There is some looks like a little bit of asymmetry of gaze, as well. Maybe in the other picture on the right, she's looking up and that may worsen some of that upwards and outwards look, may worsen that asymmetry of gaze, so, I would think she may be having diplopia.

**Dr. Gupta:**

Okay, Dr. Falahati, what do you see?

**Dr. Falahati:**

You know, I completely agree. I mean she has clear asymmetric first of all, proptosis, but everything that comes with it: the preorbital edema, the – the vascular injection, the asymmetric gaze. I would be really surprised if this woman didn't have any double vision assuming she has a vision. Again, she has diabetes, and she has other heart, health conditions, and I don't know about that aspect of it. I did not see any diabetes medications she would be on to my surprise at this age. And so maybe she's blind, and then that's kind of eliminates a few aspects of this intervention. (laughs)

But I clearly think you know, she has very advanced case of thyroid eye disease would be on top of my list. Again, she has had the

compressive – decompression surgery before. I don't know – does she smoke? I think that would be a huge factor to be taken into account. Those are the few pieces of puzzle that are missing for me, before I can make a definitive clinical decision.

**Dr. Gupta:**

Okay, and Dr. Thanadar, what do you see?

**Dr. Thanadar:**

Yeah, I agree. Again, there – there's a significant proptosis here, and there's conjugal injection. She does have some issues with gaze in the in her left eye, I think there's a little inward push of her eye. I don't – you know, I agree with everything that was said earlier, you know, those are all she – I think more so than case number 1, seems to have a lot more complications with her – with her eyes than the previous one did. You know, because again, there's a lot of redness, there's a lot of injection. There's a little bit of asymmetry and there does seem to be some effect in the gaze, so she may have some – if we do exam on her, we may notice that she does have some issues with extraocular eye movement.

**Dr. Gupta:**

Okay, so I'm going to talk a little bit about the ocular signs and symptoms that she had mentioned. She does have double vision. Her eyes are watering, and you can see in the third picture here her eyes water all the time. There's pressure behind her eye. She has a disequilibrium, looking down. The cant look at floors that have patterns on them, with a feeling like she's going to fall. She can't drive. Um, she has redness and swelling of the lids, every morning especially. She stopped working as a teacher because she felt like her eyes scared the children. She has a very prominent stare, and she had lid lagophthalmos. Uh, she has notable asymmetry. The left eye has watering and there is more in the right eye. See a little bit of that there in that – that image. So, additional info I'm glad you guys picked up on this. She's still – she has been a smoker. She smokes 10 cigarettes a day. TSH on that on that 88 micrograms was 4.59, and she does have sensorineural hearing loss. So what's your diagnosis and plan? Dr. Thanador, I'm going to start with you.

**Dr. Thanadar:**

So again, I think, you know, thyroid eye disease is very high on the differential here. She's – and it's probably more of a advanced thyroid eye disease given the number of symptoms she has, and the fact that it's also had an effect on her daily life. It's kept her from doing things. You know, treatment for her will probably be a little more difficult in the fact that, given that she's still an active smoker that can cause issues with treatment. And given also her history of type 2 diabetes, and importantly, the sensorneur – the neurosensoral – sensorineural hearing loss can be of a concern with, to be the – just because that can – that is a newer noted risk. But I would still want to send her to ophthalmology, to be able to get more information, to see if that – would a medical treatment, or potentially would repeated surgery now, be of benefit for her?

It's been such a long time since she had surgery going on 40 years? That there may be now some not may be, but there will be vast improvements in the way surgery is done, that she may now benefit from something that, when she was – earlier in her in her life may not have been available to her.

**Dr. Gupta:**

Great. Dr. Kotwal, what do you think?

**Dr. Kotwal:**

Sure. I guess in addition to the, was said, I agree. I think you know, we would want to make sure she is well-controlled from her thyroid standpoint, not too replaced or under-replaced. Smoking cessation is critical. Uh, of course, conservative measures that we would do – the lubricant eye drops, but I mean, it's clearly active disease or has – again, this is where, you know, the chronic disease and now had some, flare or worsening and with going to – it's advanced maybe not to the level of completely being sight-threatening at this time. Uh, so somewhat of emergent, urgent referral and that the hearing loss – I think it's a consideration to discuss but I think for diplumi – tumimab versus IV steroids, but again, the patient does have diabetes, although it looks like if she is not on medicines, it may be very, very well-controlled. Uh, but something to discuss with the patient but really focus on the smoking cessation too, because it may be po – that the eyes actually improve to a a decent amount after that. Yeah, that would be my thoughts.

**Dr. Gupta:**

And Dr. Falahati, what do you think?

**Dr. Falahati:**

So, I agree with everything that has been said so far. I honestly think this is a teamwork between the endocrinologist, in this case the patient, and the ophthalmologist or oculoplastic surgeon. But the patient needs to understand that she has already lost hearing, and the last thing she wants is to lose her vision also. So it makes even the significance of keeping her vision much more significant. And she needs to – the very first thing she needs to do is stop smoking. Um, I – at least in my area, the surgeons I have worked with, many of

them have refused to touch the eyes of the patient, even in more advanced cases than this one, if the patient was smoking. And so smoking has been a no-no – we are not going to touch your eyes. First quit smoking, then come back. And so, I think it really impacts anything and everything they do, in terms of recovery and outcome and intervention. So, that's very important, and otherwise, definitely something needs to be done, so bringing – on board an oculoplastic surgeon or ophthalmologist, and then making – sitting down with the patient, talking to her, and coming up with a decision that really is realistically doable and works. Um, that's what I would do, honestly.

It's scary how she has lost hearing now. She's at the verge of barely having any vision.

**Dr. Gupta:**

And, I'm going to tell you what I did. I didn't adjust the thyroid medicine because she was taking it with all of her other medicines. There was heterophilic binding. No one had told her that for 40 years. I did refer her to oculoplastic, for a comprehensive eye exam, and I also had a, had her get a face mask for the night so she – because she has a lagophthalmos, and she wasn't able to fully close her eyes.

**Dr. Falahati:**

I agree also with not pushing too much for increasing the dose and suppressing the TSH anymore – or not suppressing it to – in my experience, in cases of severe Grave's eye disease, when you just push for the higher and higher thyroid levels the – the severity of the disease, sometimes, or is it the patient's perception, but they call and say, you know, my eyes are getting worse with the higher dose of thyroid medication. So you don't want to overdose or underdose significantly. So, a TSH of 4, 4.5 is fine. I would not change it.

**Dr. Kotwal:**

I think the nighttime part is quite important, as you said, Dr. Gupta. Like the, you know, mask – uh, the eye mask, especially because people may not realize the – their eyes do remain open, especially and that can kind of further increase the – you know, the corneal exposure and all those risks, so that sometimes can, you know, unless the patient is telling us, or we specifically ask them, or who they're – you know, their – who's seeing them while they sleep, that the eyes stay open or it's very crusty in the morning, and very dry, irritated or even watering in the morning. That could all suggest that it's not closing, so I – yeah, that's a great idea also.

**Dr. Falahati:**

Absolute.

**Dr. Thanadar:**

And I think again, too, the talking about smoking cessation and saying how important that is in a proper way, but hearing it from your physician carries a lot more weight than people think. Um, that we as physicians may think that they take a lot of that into – into store, and I think just saying how important smoking cessation – I mean, she's half a pack a day, but if she can get that down to a quarter pack, and then eventually off that – that should be encouraged, and worked on. It's not something that, typically, as endocrinologists, we think about doing, but in this – in – in this instance all the more so, it would make a big difference in her overall health.

**Dr. Gupta:**

Okay, great. So we're going to move on to case number 3. This case is a 61-year-old male, who presented to his primary care physician with weight loss and a rapid heart rate in the low 100s. Had a history of hypertension, prediabetes, hyperlipidemia. Had a family history of lupus and sarcoidosis. He's on benazepril, metformin and pravastatin. Nonsmoker. So what would you, just based on that without seeing a photo, what steps might you take to help determine the diagnosis?

**Dr. Thanadar:**

Well, I think first, it – you know, it might be a little biased on this, but the first would be to say are we suspecting any kind of thyroid abnormalities, and we just need to see what – at least the TSH looks like, with maybe a reflex-free T4 to – if there an abnormality there, to look at that, because that'll help guide us, in further decisions.

**Dr. Gupta:**

Dr. Kotwal go ahead with what...

**Dr. Kotwal:**

No, I agree. I think you were presenting the other – I mean, you know, some general tests as well, if they're presenting to their primary care. You know, they've had weight loss, so like, you know, blood count some of those things – renal function. But I think the thyroid being thyrotoxic is fairly on the differential here, so a – agree with proceeding with that plan.

**Dr. Falahati:**

Absolutely. Same here. And again he is having rapid heart rate, losing weight, thyroid needs to be ruled out, thyroid disease. But also, additional measures – EKG, et cetera. Weight loss – it could be anything, but also de – definitely, obviously, thyroid or hyperthyroidism,

but also diabetes and other issues. So it needs to be all looked at, in addition to malignancies, of course.

**Dr. Gupta:**

So, additional patient information. So, CMP, CBC, TSH, free T4 free T3 thyroid peroxidase antibody, thyroid stimulating immunoglobulin and A1C was drawn. A1C was 6.0, on the metformin. TSH was undetectable. Free T4, free T3 were markedly elevated. Thyroid stimulating immunoglobulin was elevated. TPO antibody was elevated. So, what's your diagnosis, and what would you start as treatment? Dr. Thanadar?

**Dr. Thanadar:**

So as an endocrinologist, the first thing I would say, this is a thyroid toxicosis that is most likely due to Grave's disease, or an autoimmune hyperthyroidism.

The TSI, it being elevated and so would go in that direction. You know, if there was an, a indeterminacy to the diagnosis, you may want to do further imaging with, like say, a thyroid scan and uptake. But, for him, it seems like you know, it looks like a duck, quacks like a duck, in some aspects. He's got an undetectable, TSH. He's got a significantly elevated free T4. He has clinical symptoms and he is antibody positive, so the next step for me – part of it would be to know exactly how high his free T4 was, to determine starting medications, but probably start some propranolol to help with the heart rate and the palpitations. That'll give him some symptomatic relief, and then start him on methimazole. Not concurrent – I mean, not consecutively. Those would be concurrent – together.

**Dr. Gupta:**

Dr. Kotwal, what about you?

**Dr. Kotwal:**

Yeah, I completely agree with the kind of, the plan. Sounds like, looks like, reads hyperthyroidism or autoimmune hyperthyroidism, although, you know, we think of painless thyroiditis and other transient causes, but usually the thyroid stimulating immunoglobulin should not be high in those. There are cases of biotin interference, but again, the TSI from the bio assay should not be falsely elevated in those, either. Um, so this patient has symptoms. Now on exam, if we do feel like a – like a nodule, because there can be Grave's hyperthyroidism with a nodule. Right? Um, so in those cases, if we feel anything then we – I usually do a dual ultrasound in that setting to make sure we're not missing suspicious nodules with Grave's disease. Um, but if not, then I – I don't think we need more in, imaging. Um, the uptake in scan, you know if we are using that as a treatment radioiodine, then it may help but if we're not choosing to use that I, again, would not be really needed for diagnosis in this scenario. Um, as for the treatment, yeah, I agree with symptomatic management, with a beta blocker. Propranolol, some patients, you know, don't want to take medications two or three times a day, so like atenolol. But some kind of, you know, beta blocker for those symptoms especially given the age. Um, we do get concerned of the heart. You know, the patient's having the heart palpitations. Just want to make sure that they're not sitting with like a low EF, and this has been undiagnosed for a long time, so you know, I think a EKG is maybe – maybe reasonable because if – you know, there's terrible cardiac dysfunction, we'll catch it on that. I don't see – I mean, if that's okay, we should at least kind of start treatment. And then, the specific hyperthyroid treatment, you know, I discussed the various options. Um, looks like their liver function and CBC were okay so methimazole is reasonable at least to control the hyperthyroidism initially. And then, you know have – I usually have the patient at least start thinking about potential permanent options, if the methimazole doesn't work, or they, say, have a side effect, or they're like, I don't want to take this medication.

I would say that's reasonable to start with this plan now.

**Dr. Falahati:**

So, I agree with both colleagues here, but I want to put a different spin on it a little bit, and you know, the possibilities at this point are Grave's disease, slightly elevated or elevated TSI and hyperthyroidism. It could also be toxic thyroid nodules, so definitely physical exam would be great, but many times you don't really feel the nodules – the toxic nodules – and you do that scan and you find out, oh my God, there is a toxic nodule, or multiple smaller nodules that are toxic. And so – and this third possibility is subacute thyroiditis and again, in that case methimazole would really do nothing here. We will just be wasting our time. Um, but – and so, in that case, definitely the use of propranolol – I like to use extended release propranolol, start with 80 milligrams and work it up for the sake of compliance. But I think the thyroid uptake and scan would be great, or at least a Doppler, a thyroid ultrasound with a Doppler to look at the no - if there are any nodules, look at the vascularity. If it's a single nodule that is suspected to be high, get this scan and offer RFA. And if, so, I think there are – we can take it in every direction, if you want, but definitely, methimazole is a great choice if you want to be the least, choose the least aggressive approach and just get this gentleman controlled and regulated, if it is not subacute thyroiditis.

**Dr. Thanadar:**

I think a lot of times, also, is there – any – you know, it wasn't made mention in – in this case, but a lot of times there can be some cognitive issues that go along with being so hyperthyroid. You know, you can't think straight, you're not necessary – you got that fog,

you know, and so many times, just even saying, you have Grave's disease, and this is what we're going to do. And then, you know, it gets to be a lot for them to hear. I think, a lot of times it is helpful to at least get the get them closer to a euthyroid state, and then be able to discuss, well, do we want to continue this on medication for awhile. Do we want to do more definitive therapy? And then, what are the definitive therapies? And then, hopefully, it is something that they're more able to, kind of, take in. It's an awful lot to take in all at one time.

**Dr. Falahati:**

Absolutely.

**Dr. Thanadar:**

But agree, that there's so many different options that can be available, and part of that is going to be, you know, each patient is going to be a little different. You know, some patients are going to be adverse to surgery. Some patients are going to be adverse to doing RAI. Some people are adverse to the medications, as m – made mention by Dr. Kotwal, that they just don't want to take that many meds. Um, and so, everyone – the right answer for the patient is the right answer for them, and may not always be the right answer for other people.

**Dr. Kotwal:**

Yeah, I completely agree with this earlier, the – that – what Dr. Thanadar is saying about the earlier, like, when they are – people are hyperthyroid, they may not be focusing well, or even sometimes comprehending. So I also tell them, listen, it's called Grave's disease, but doesn't mean that it's going to take you to your grave or something. It's not a grave condition. I have had patients sometimes if the – since then I kind of say, well, this is autoimmune hyperthyroidism. This is the name of the person who discovered it. It has nothing to do with a grave, I guess but, yeah.

**Dr. Gupta:**

Okay, so this is the a photo of the patient and how he presented. I'm going to start with you, Dr. Falahati. What do you see?

**Dr. Falahati:**

Well, I see a patient with clear proptosis, with their left eye being more prominent. So, asymmetric proptosis I – based on the – on what I am seeing, I do see periorbital edema and, significant redness of the sclera. So, vascular – probably vascular injection. Again, this is not a very high resolution image, but based on what I see, is that the same patient?

**Dr. Gupta:**

The same patient.

**Dr. Falahati:**

Okay. So, same patient – overactive thyroid now, with these kind of eyes. (laughs) That changes the whole story. And so again, elevated TSI, proptosis, asymmetric eyes but she – he also has a family history of sarcoidosis. And there is a possibility of orbital sarcoidosis being the cause of his proptosis, so I wouldn't jump into the conclusion of Grave's disease right away. On the other hand, he has also family history of lupus – autoimmune disease, and so Grave's disease is again a good possibility. But, I would – definitely would like to see what's in that orbital space and behind it, before I jump into any conclusion.

**Dr. Gupta:**

Dr. Thanadar, what do you see?

**Dr. Thanadar:**

I, I agree with a lot of that. I do see one a man. So, in that aspect, he may have more risks for more severe eye disease. Do see the asymmetric eyes as well as the proptosis, the UV redness the periorbital edema and agree that there is a lot of family history of autoimmune disease here, so for him, while he has a Grave's disease, his – his numbers, with his TSH, his free T4, total T4 and his antibodies are – are showing that there is an autoimmune hyperthyroidism here.

Whether or not the eye disease is related to a thyroid eye disease, or are there other things in his family history that could increase that on his differential, like the sarcoidosis, like the lupus. Those definitely need to be looked at, and ruled in or ruled out, to say, are these two connected? You know, we always look to say, keep it simple, and have one thing explain everything, but in – given in his family history, there could be other things that happen to be showing up at the same time. Or has triggered the other and that we don't want to necessarily – we don't want to miss that – not even necessarily, we don't want to miss that at all. So we want to make sure that while we think, again, this is Grave's eye disease or this is thyroid eye disease, alongside an active Grave's disease we want to make sure that we're not missing other things that could cause similar signs and symptoms.

**Dr. Kotwal:**

Yeah, I completely agree. I've just – so this is where I – the orbital imaging will if – going to be very helpful, because there is more pronounced involvement of – of the one eye, which we can – can happen in thyroid eye disease, but again, you know, it will be helpful to see that orbital imaging to, kind of, differentiate a little bit between some of these etiologies.

**Dr. Gupta:**

Okay, so going to talk a little bit about the signs and symptoms that he had. Um, the left eye had a lot of watering and pressure. There was upper and lower, eye-watering. The – there was redness of the left and the medial portion of the eye. He had a tugging sensation of the eye. He had a lot of difficulty looking down, and difficulty driving. So what's your diagnosis now? Dr. Kotwal.

**Dr. Kotwal:**

Well, yeah, I think it looks like all the symptoms are also in the left eye which again, can be in thyroid eye disease but I would – so to get to the diagnosis, I think it's useful to get orbital imaging here, whether it's, you know, a CT scan or an MRI with gadolinium. Um, get it to look at the muscles, fat distribution and things like that – really, how the compartment is. There could – you know, there could also be, like a compression like a – you know, like a one of the blood vessel, like tumor, hemangioma the – there are unilateral factor that could compress it, completely unrelated to the thyroid or any of of the infiltrative causes because it looks like a lot of issues – or almost all of them – are in the left eye. Um, so would want that first. I think this patient should see given this extent of issues, Oculo-Plastik. Then they possibly recommend a specialist as it appears a lot of, kind of, pressure on the left side. Control the hyperthyroidism for sure, right? I mean, we want to be, and you do that in a very timely manner. This is where – you know, with this eye, we do know with eye disease, it'll get worse with radioiodine.

We don't – so, I think starting methimazole, some – I – antithyroid medication controlling their hyperthyroidism is – is very important. Uh, not making them extremely hypothyroid also is important, so that titration of the dosing. Um, and that's – yeah, that's my thoughts.

**Dr. Gupta:**

Dr. Thanadar?

**Dr. Thanadar:**

No, I agree with Dr. Kotwal. You know, we have couple of things here. One is the diagnosis of an autoimmune hyperthyroidism or Grave's disease. That does need – that diagnosis stands there. Um, regardless of what's going on with his eyes, that is a diagnosis that needs to be treated because it's active. And at the moment, given you know, the questions of risks and benefits of saying, starting him on some methimazole, starting him on a beta blocker, being able to give him some symptomatic relief as well as getting him closer to a euthyroid level. That's going to be important, but also in the meantime, because of the questions that go along with his eyes, and his family history you know, we can't outright just say, oh, this is thyroid eye disease. There could be other things that we need to look at and rule out. And so, on that basis, referral again to a specialized ophthalmologist or a neuro-ophthalmologist or even Oculo-Plastiks. That might be a little early, but to be able to seem - more about what's going on, to rule in or rule out other reasons outside of Grav – uh, outside of thyroid eye disease. And again, imaging – we would as an endocrinologist, we can get that and get either a CT or MRI, to be able to get a better picture of what's going on with that left eye, because as Dr. Kotwal said, you know, you can see asymmetrical disease with thyroid eye disease. However, it's not as common. It's usually seen in both eyes. May not be equal in both eyes, but typically you see things in both eyes, and earlier, his issues that he brought up were all left-sided. It sounds like he has very little issues with his right side, and that should raise a little red flag, to say well, maybe this isn't Grave's eye disease and it could be just a – it's a little confounding, and we need to make sure that we follow up on that as well.

**Dr. Kotwal:**

These are very interesting cases.

**Dr. Falahati:**

Very much so, yes. You know, but also one thing that I have learned after all these years is really make an effort to get the appointment with the eye specialist ASAP. Don't just he – send a message to your MA saying he needs a referral, and then three weeks later, you find out nothing has happened, or the ophthalmologist is six weeks out. Um, so, really picking up the phone and talking to them – maybe even ordering the imaging study, the MRI would be my choice, probably, to just see what is going on, what level of edema behind the eyes, around the eyes we are seeing.

While we are waiting for that, I will just...

**Dr. Thanadar:**

Yeah, this is when a good relationship with your peers, colleagues helps. You know, when – when you know them, you can – when you – and they know you, but you say this patient I've seen really urgently needs to be seen. They're going to take you at your word, and be able to try to work them in.

**Dr. Falahati:**

Oh, absolutely.

**Dr. Kotwal:**

Yeah.

**Dr. Falahati:**

And they know when it's urgent, you text them and say, hey somebody needs to be seen right away, and they do that. Definitely.

**Dr. Gupta:**

I definitely agree. So this is what I did. I added the propranolol, to assist with the heart rate. Um, I initiated methimazole, 20 milligrams twice a day. I did not place him on steroid einsteinium. And called Oculo-Plastiks immediately.

**Dr. Falahati:**

Perfect.

**Dr. Gupta:**

He did get to 8 infusions. Has some mild nausea, but no other problems. No exacerbations of glycemia, despite having prediabetes. He had audiology testing before and after treatment, without any issues. And then following the 8 infusions had no watering, pressure or pain. Some of the lid swelling remains, but he was really satisfied with treatment, and I think you can see he's had a remarkable improvement.

Alright, so Case 4. Alright, so this is a 62-year-old female, who was kindly referred by her nutritionist. The primary care physician had measured some numbers – so, TSH was 3.5. She has fatigue, weight gain, some occasional constipation prediabetes dry eye, hypertension, hyperlipidemia. She was on rosuvastatin, amlodipine and verapamil. No allergies. She had one daughter who recently had a thyroid biopsy that was indeterminate, but then ultimately benign. So what do you think? Dr. Falahati.

**Dr. Falahati:**

You know, I see a woman with relatively normal-looking eyes, other than just a lower lid edema, slightly. But the sclera are pretty clear, except on the left side maybe few vass vessels are visible. The eyes, as far as I can see, are symmetrical, not proptotic. She has a kind of rash on her face, of some kind. But honestly, I don't see anything significantly wrong with her, other than the – the kind of butterf – it's not even butterfly rash. It's just a rash above the eyebrows, nose and lower lids.

**Dr. Gupta:**

Dr. Kotwal, what do you see?

**Dr. Kotwal:**

Yeah, so on – at least on the one view here, it doesn't there doesn't appear to be a significant abnormality that we would, kind of think are associated with specific eye disease. Now, this is where, I think, the real time – like, visualization, having the patient, you know, shift the gaze, extra – accessing extraocular movements, because sometimes things do actually show up on that. Maybe she has a lot of conjunctival injection to the sides, and we haven't looked at there. We want to look under the conjuncti – you know, at the conjunctival under the eyelids. On this view, there does not appear to be significant abnormality of the eye. That's all I can say with this.

**Dr. Gupta:**

Dr. Thanadar?

**Dr. Thanadar:**

So, yeah, I mean, she as pointed out you know, it does seem like she has a little lower lid edema, and there does seem to be a little, kind of, erythema on her face. Um, you know, she kind of seems like she has a stare, but, you know, that could be just looking at a camera. Um, you know, I think on her, y – it may be more subtle, you know, and the question would be, are there any visual field testings or any acuity testing or color testing that might show that she does have some issues that aren't necessarily of – of physical manifestation right away. But yeah, overall, I wouldn't say that she has much, if any, eye disease, but looks can be deceiving.

**Dr. Gupta:**

So the previous ocular history – had a history of dry eye was examined by optometry. Occasionally has watery eyes. Used to have upper eyelid swelling and redness. She has a – occasional pressure behind the eyes. No one in the family has been diagnosed with thyroid eye disease or thyroid disease besides that biopsy with her daughter. So what steps would you take to determine the diagnosis? Dr. Thanadar.

**Dr. Thanadar:**

So again, it's probably some visual test – visual eye testing, some – just, like a Snellens chart. Some to see if there are any visual field deficits. Obviously not as – as detailed and comprehensive as, say, the ophthalmologist would do, but at least to get some idea if there's some – you know, you could do some confrontational testing do some acuity testing to see if there is anything – to see is there any kind – I don't recall – to see if there was any baseline TSH or antibodies that were done, just because – but even if those are negative, doesn't necessarily take away the ability to say that she might have some mild thyroid eye disease.

**Dr. Gupta:**

Okay, Dr. Kotwal?

**Dr. Kotwal:**

Yeah, so, I – I think a slit lamp exam, looking at the eyelids you know, this could be kind of this chronic conjunctivitis, chronic allergies as well. But this pressure behind the eyes is slightly concerning there, because usually it would not be present with just, kind of, allergic conjunctivitis. So I would, yeah, check thyroid stimulating antibody. You know, that's very high, even though the patient has euthyroid now, I think the TSH was normal. I would do investigation for thyroid eye disease. And so I would do those tests, and the you know, in addition to the visual acuity, field of vision tests, et cetera.

**Dr. Gupta:**

Dr. Falahati?

**Dr. Thanadar:**

I did miss that. You did – there – her – she did have a D – a TSH of 3.5?

**Dr. Gupta:**

Yes.

**Dr. Thanadar:**

Sorry. Missed that one.

**Dr. Falahati:**

So, again this is one of those cases where you – again, the pressure behind the eyes is the only concerning, and then the tearfulness of the eyes, on and off occasionally, could be the result of the dryness. Um, I would, just to be safe, and being the endocrinologist get the TSI or TRAb measurements, and if they are normal like this, we can rest assured that it's not anything thyroid-related, but ultimately I honestly would defer to an ophthalmologist. After the initial blood test.

So again, thyroid function is normal. I have seen quite a few patients with thyroid eye disease, normal thyroid function, elevated TRAb referred to me by ophthalmology, saying Grave's disease, treat. And I'm like, what do you want me to treat? (laughs) But again, that is definitely a good possibility. If they are elevated, maybe we want to try some selenium, as you did in the previous case. Um, but really, I would defer to ophthalmology most of the work.

**Dr. Gupta:**

Okay, so, I'll tell you what I did. So, she was referred to me for fatigue. Um, so I left the room, and then I jumped back into the room because I had that – she had that stare, and the stare was really bothering me. Um, I repeated the thyroid function study with TPR antibodies and antithyroid globulin antibodies. TSH was 3.97. Free T4 was on the low side, 0.55. Um, TPO antibodies were negative, and thyroglobulin antibodies were negative. And then I went ahead with an ultrasound, because sometimes that gives me more information. I did the ultrasound also because her daughter had that indeterminate nodule. And the bradycardia was very consistent with chronic lymphocytic thyroiditis with a nodule. When I did an FNA on the nodule, and it was consistent with a Hashimoto's nodule, and so I started her on levothyroxine. I also put her on some selenium. What's your plan? Does the patient have thyroid eye disease?

**Dr. Kotwal:**

You know, I don't think we've done all this. I don't see there is a pattern stimulating antibody, right? I you know, you could have autoimmune thyroiditis, and still high thyroid antibody. Maybe the patient was hyper and now you – so I would still do that. I think it will help. If it's very, very high, the – you know, we should follow this person a little bit more closely. You know, the dry eye disease – there is so many causes of dry eye. As someone who suffers from it, actually every day, I mean, we – there is some association with people with Hashimoto's or chronic thyroiditis. I don't know if there's a causal link, but there's an association. The – we want to make – there could also be that people who are prone to autoimmune thyroid disease are prone to allergic conjunctivitis or chronic allergies that can then pre – uh, predispose to eye disease. There are, you know, they could be on a steroid drops – olopatadine drops, making sure that the cornea is not too thin. And so I think this is where ophthalmologist to evaluate those things. Lot of times, kind of like montelukast inhibitors, like olopatadine and all, actually work fairly well. And yeah, I guess those are my thoughts. I don't think there is – we have a clear diagnosis of thyroid eye disease here, but I would check her stimulating antibody and kind of, at least get that.

**Dr. Gupta:**

Dr. Falahati?

**Dr. Falahati:**

You know I again, we know that there is an association between thyroid eye disease and dry eye disease. But in this case, in your case, we don't even know if she has thyroid eye disease. Hashimoto's thyroiditis, again yes it has been associated also with thyroid eye disease – kind of second syndrome. At the same time yes, there those antibodies – TSI or TSH receptor antibodies would be helpful or good to know about, but does she have TED? I don't think so, it doesn't look like it, and the treatment would be aimed at, pretty much, managing the dryness. Um, selenium – again, I like that idea. I do use it a lot and referral, again, to ophthalmology, because of, they can kind of do different things, such as putting these little plugs in the lower drain of the eye, to kind of block the drainage of tear, and add moisture to the eyes, to kind of treat the dry eye disease in a way if it's just a tear – underproduction of tear. Um, again, some patients with Lasik procedure also have that kind of problem. I would refer to ophthalmology, or stands \_\_\_(laughs, unintelligible, 62:15).

**Dr. Gupta:**

Dr. Thanador, what do you think?

**Dr. Thanadar:**

Yeah, I, and I agree on the – I'm going to kind of go working backwards, is that I do agree that referral to an ophthalmologist would be important here because again, there could be other things here at play, and not just, thyroid eye disease. And the ophthalmologist may have other things in their armamentarium, in their arsenal to be able to help treat and give her some symptomatic relief. But as you said, the stare does bother – you know, I noticed it and it's a little more than what you see, kind of, in people have pictures taken and – and we know that there can be antibody-negative issues. And given that her ultrasound and her biopsy kind of came out with Hash, then the question is, you know, are we just not detecting her antibodies? And could thyroid eye disease still be at play here? So I can't at this point rule it out but I don't think – even if she does have, say, thyroid eye disease, her eye disease may not be of such significant level that she would need a more aggressive treatment. And again, it may be symptomatic treatment – things like drops, things like increasing lubrication, that may help with giving her some of the relief from the dry eyes and – and some of the antihistamines may help with some of the watery eyes. But, I think, as pointed out, that the biggest key here, I think, would be that she's referred to an appropriate ophthalmologist who does have some, expertise with thyroid eye disease and so they don't necessarily cross it off the list because she's negative for everything – that they also look at that a – you know, like, especially like with your br – you know, your first patient. Now mind you, that was 2014 – almost 10 years ago. There was a there may be more of a reason of just knowledge base at that time where thyroid eye disease wasn't thought of with that patient.

But if you have someone who actively treats and looks for thyroid eye disease, with an ophthalmologist who specializes with thyroid eye disease then they'll have that on their differential, and not necessarily skip it because she doesn't – she doesn't have the typical things that you would see with somebody with thyroid eye disease.

**Dr. Gupta:**

That's interesting that you guys would have gotten the thyroid stimulating immunoglobulin on that patient, because that, your – she didn't even have a diagnosis of thyroid before she was sent to me. She was just sent to me for fatigue so I found that interesting.

**Dr. Kotwal:**

I think it's just the eye is – and it's a not a clear cut concern. It's, again, something where sometimes I – oh, who was that patient we saw a couple months ago? Maybe we should get this antibody and see. You know? Or take you there, that you went back in the room, and... So it's not clear cut, and I – again, you may not – it may not change what you do, right? Because if they're not hyperthyroid, and their eyes are not that bad, it may not still change what you do.

**Dr. Gupta:**

Okay, great. We're going to go to the next case. So this is a 55-year-old female, who had a low TSH. She has some jitteriness, no weight loss, no teeth or hair, skin or nails. Thyroid stimulating immunoglobulin was, 4.4 – elevated. No history of smoking. What do you see? Dr. Falahati?

**Dr. Falahati**

Well she is hyperthyroid. She has an elevated TSI, doesn't smoke. There was no other significant information that could make you think otherwise, so she clearly has a proptosis of the left eye although the sclera is clear. There is no major periorbital edema, no vascular injection. But there is some lid lag, and just slight asymmetric unilateral proptosis. Um, so that's what I see.

**Dr. Gupta:**

Dr. Thanador, what do you see?

**Dr. Thanadar:**

So, I see those similar things the asymmetric aspect of her eyes, the – uh, the more pronounced proptosis on the left versus the right. Um, I do see where she has – and it's probably because I'm a woman, that I'm noticing this – um, she has had loss of her eyebrows as well as her eyelashes because she's drawn in her eyebrows, and has emphasized with black eyeliner the potential for eye – eyelashes.

I don't see a lot of erythema, nor do I see a lot of edema. Um, and there is some slight discoloration in her face, but that's probably just incidental.

**Dr. Gupta:**

Dr. Kotwal, what do you see?

**Dr. Kotwal:**

Yeah, I mean, I agree, the left is more pronounced with proptosis. Uh, maybe a little bit periorbital edema, more pronounced on the left. I, Dr. Thanadar, actually did notice the eyebrows also and so there – with the hyperthyroidism, we know that people, or, can have some thinning there. Um, but again, we're not seeing a lot of inflammation features, at least on this exam at the moment.

**Dr. Gupta:**

Okay, great. So she has previously seen three different ophthalmologists, and started on selenium. Does not have steroids. The pain in her right eye – not the left eye – no pain looking downward, upwards or laterally. Had watery eyes at night. She had inflammation of the cronical some eyelid swelling. Her left eye had pressure, but not the right eye. What do you think is the diagnosis and treatment. Dr. Kotwal?

**Dr. Kotwal:**

You know, so I think this is where it's important to see – hear what the patient is also complaining of. I you know, with the diagnosis of hyperth – autoimmune hyperthyroidism, elevated thyroid stimulating antibody, this appears to be thyroid eye disease. The there are bilateral symptoms, though the pain is more on the right and it could be that just today, when we are on that clinic visit, the patient has more pronounced features of the left, but the – they change, actually. So it – there's still, I – I think number one differential here is thyroid eye disease. Um, control the hyperthyroidism – we've talked about that before, so I'm not going to go into great details. Um, conservative measures, for sure – lubricant eye drops and those things, especially if she has lid lag or trouble closing her eyelid. But I would say, you know, this is where it's kind of not sight-threatening, but it's kind of in that mild advanced, moderate advanced, kind of scenario, where there is some very mild inflammation of cronical which is not very apparent. Some symptoms, and pressure, proptosis. I would do the Hertel's to, kind of characterize the proptosis and the – you know, our visual acuities, Snellen's and all of those things. Imaging, I think, would – may help. It appears more unilateral, but I don't think it's critical. This is where, probably, a little bit of a discussion of next steps – you know, what is bothering, how much is the quality of life affected, what things trigger discomfort, what she does, and you know. Because there – you know, especially if there is diplopia, which I don't think was mentioned, but maybe there are things that – that worsen her diplopia.

But could be a consideration for biologic treatment, and you know, there is teprotumumab, there are others – bi – other biological treatments as well, and some of them are more short-acting. Um, co-management – yeah, of course. I mean these I don't think this is super, super urgent, but you know, this person should still, in a very timely manner, see ophthalmologist. I don't know if a Oculo-Plastik surgeon in this scenario, but you know, if they're your TED expert, then – from the eye standpoint – then it's reasonable to send to them or a TED ophthalmologist there.

**Dr. Gupta:**

Dr. Falahati, what do you think?

**Dr. Falahati:**

You know, I completely agree. We have the luxury of not having to rush into anything immediately, and we can take our time, but she clearly has an overactive thyroid that needs to be addressed, and we know – we talked about different options at this point. That needs to be addressed. She's jittery, I wonder if she has rapid heart rate and so on. Use of beta blockers, continuation of selenium but to me, this is very likely to be in early stage – the beginning of something more significant. Also, the fact that the right eye is the one that is hurting is interesting. That means something may be brewing there, and the inflammation is actually going on, while in both eyes maybe more prominently behind the right eye and it's in the process of becoming more inflamed. Again, that's why I would like to really have a good thyroid eye disease specialist onboard. Have them take a look at the patient, and if they need imaging studies, go for it but definitely I'm reluctant more about what is going on. Why is she having pain in the right eye? And also be on the same page, or at least involved in TED specialist at this early stage to be prepared for what may be coming. Um, steroid use – again, I don't think is necessary at this point yet, and just conservative management, and again, her vision is not affected. So, we really can wait to see what the TED specialist says first, before we jump into any further intervention.

**Dr. Gupta:**

Great. Do you guys have anything else you would add?

**Dr. Thanadar:**

I would just say that I do think that maybe – there could be something else brewing here. And the fact that she has pain and pressure behind her eyes, but not necessarily pain with the movement, and you know, could there be a concern that – you know, is there something else going on, not just the thyroid eye disease, but could there be, an optic neuropathy? Could there be a mass that could be having an issue?

I think on her, while thyroid eye disease would be of concern, I think other things do need to be looked at, but I agree, as well, that the biggest thing for her is referral in a timely manner, to an ophthalmologist who specializes in thyroid eye disease as well as having, maybe an – like, even a neural ophthalmologist who would be able to help differentiate out, if there's something else going on.

**Dr. Gupta:**

I'm going to tell you what I did. We have a really good relationship with our Oculo-Plastiks team so we've been working on her case together. She was started on selenium, did get an MRI. took care of the hyperthyroidism. Interestingly enough, the eyebrows were something of a concern. Using, some of the the tattooing, that – that did help her. She some sort of microblading technique to get a little bit of a better look. Hair didn't grow back in. The eyelashes used the prostaglandin but a – analog that was mild with Oculo-Plastik to start helping with that growth. told her to turn the, ceiling fan off. So that's a big problem, because that dries the eyes and makes it worse. I usually stop the ceiling fans, and put the the mask on.

Alright, so we have round 1. Our champion of voting is Dr. Thanadar.

**Dr. Kotwal:**

Alright.

**Dr. Thanadar:**

Thank you.

**Dr. Falahati:**

Good job.

**Dr. Gupta:**

Good job. Okay, so you take – to get CME credit, you're going to receive an email shortly, with more information on how to complete the post-test evaluation and submit it for credit.

**Dr. Falahati:**

Okay.

**Dr. Gupta:**

Dr. Thanadar, Dr. Kotwal, Dr. Falahati you guys are true giants in thyroid and in thyroid eye disease. I had a pleasure learning and speaking with you tonight, and we really appreciate all of your help with in this KOL Knockout.

**Dr. Thanadar:**

Thank you very much.

**Dr. Kotwal:**

Thank you very much. Thank you, Thank you, Dr. Kotwal thank you Rokshana.

**Announcer Close:**

You've been listening a replay of a live broadcast, titled "KOL Knockout: Endocrinology Edition – Thyroid Titans Clash to Enhance Outcomes in Thyroid Eye Disease Round 1." This activity is provided by Evolve Medical Education, and is supported by an unrestricted educational grant from Horizon Therapeutics.

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