



Best Practices in Ocular Emergencies

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General Seminar Objective

To discuss a few cases that demonstrate how best to communicate with the internist or pediatrician for the best patient outcome. We will also demonstrate in each case how coordination of care is always in the **best interest of the patient.**

Instructional Objectives:

Discuss	Discuss various ocular and systemic diseases
Highlight	Highlight challenges that may arise during and best practices in co-managing these patients with their internist or pediatrician
Review	Review specific challenges in diagnosis and treatment

Rita: Appointment

Pt made an appointment with primary care because of vision loss

Reason for visit on scheduler is: "Decreased Vision in Right Eye over past month"

Patient is on HMO and has seen two eye doctors on her insurance plan already

Rita: Appointment

At her visit with Primary Care she complains:

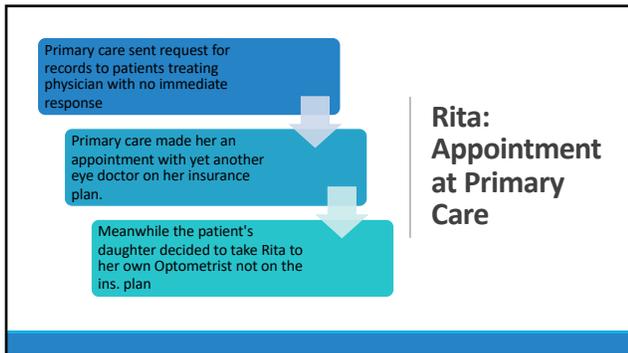
"The eye doctors I have gone to tell me nothing is wrong but Glaucoma and that I need new glasses which I purchased, and they didn't help."

Rita: History and Physical

 59-year-old Hispanic female with normal medical history and work up.

 No history of eye disease other than the diagnosis from local ophthalmologist of Glaucoma being treated with drops.

 No letters have been received from treating doctor of any further eye problems.



Rita: History at the OD

- 59-year old Hispanic female
- Pt says she has lost all her vision in her right eye in the past month
- Pt has been under the care of a local ophthalmologist who is treating her with a yellow top drop in that eye for pressure
- Pt says her vision started getting worse rapidly over the last month and other doctor told her she needed new glasses and the glasses didn't help

Rita: History

- Pt has no history of medical problems
- History of Glaucoma tx'd for 3 years
- No family history of eye or medical problems
- No symptoms of headaches, eye pain, sinus pain, numbness of extremities or flashes of light or floaters
- No other complaints

**Rita:
Examination**

-  Vision Counting Fingers at 1 FT OD and 20/20 OS
-  EOM's full with no restrictions
-  CF severely constricted OD and FTFC OS
-  Pupils are equal and round with 4+RAPD
-  External evaluation shows no ptosis or exophthalmos OD or OS

**Rita:
Examination**

-  SLX reveals normal anterior chamber structures with mild NS OD and OS
-  Iris is normal with no previous PI's
-  Gonioscopy shows CBB 360 degrees OD and OS with no evidence of angle recession or prior episode of angle closure
-  IOP is 10 OD and 11 OS on Timolol 0.5% OD only

**Rita:
Examination**

-  Dilated examination shows normal retinal appearance OD and OS
-  Optic nerve OD is 0.5 C/D and with pallor
-  Optic nerve OS is 0.5 C/D with no pallor

Rita: Examination

VF testing reveals complete restriction OD and completely normal VF OS

We attempted to get last Dr's records and were unable to get this done that day so tried to get him on the phone but were told he was out of the office until after the weekend

Pt says she has never had any imaging done to determine cause of vision loss

Rita: Differentials

Glaucoma (symmetry, no pallor, slow progression)

Space occupying lesion causing compression on the optic nerve

AION (disc swelling, sudden vision loss not progressive over one month)

Optic Neuritis (Pain)

CRAO (retina is edematous)

Rita: Diagnosis Challenge

Wrote letter to primary ordering MRI of orbit, brain and sinuses today and emergent referral to ENT tomorrow as well as a neuro-ophthalmologist

Sent copy of letter to primary care by fax and gave 3 copies to patient to carry to each doctor and one to keep

Called primary care doctor and told of my concern and need for imaging

Primary ordered the MRI

Rita: Diagnosis

Imaging revealed a mass in the sphenoid sinus

Surgery revealed a Pyomucocele of the sphenoid sinus that had eroded into the area of the brain around the pituitary fossa. The surgeon found the structure to have been compressing the optic nerve as well

ENT called our office later to say the patient was doing well and would be in isolation for a month to prevent any secondary infection. He reported that this was a most unusual case due to the lack of any symptoms other than vision loss and the patient had probably been two or three days away from death due to location of extension and amount of infection

Rita: Diagnosis

Mucocele

Epithelial lined mucous-containing sac that completely fills a paranasal sinus
They are capable of expansion by bone resorption and new bone formation
They are the most common lesion causing expansion of paranasal sinuses
Slow to expand. Can take 10 years or more before pt becomes symptomatic
When becomes infectious then called Pyomucocele

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Mucocele

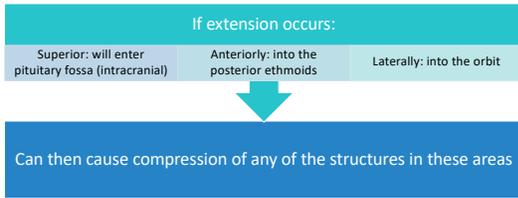
- Symptoms include headache, facial pressure, facial swelling with tenderness to touch, ocular and neurological problems
- Pathophysiology: Sinus drainage (1C/day) becomes blocked by chronic sinusitis, trauma, surgery or tumor and then Epithelium continues to secrete which causes the mucocele to expand and the pressure on the bone causes bone death and inflammation causes bone reabsorption

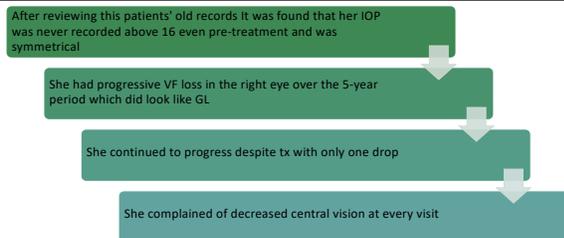
Chronic Obstructive Sinusitis

15-20% of COS results in extra sinus complications such as intracranial or orbital complications

Any sinusitis that doesn't resolve with antibiotics or recurs needs CT Scan and evaluation by ENT to determine if drainage is blocked

Sphenoid Mucocele





Rita: Review of old Records

Rita: Treatment

- Surgery was necessary to remove the lesion and decompress the sphenoid sinus and then reconstruct it so that it would drain properly in the future
- The patients vision never returned in that eye however we did make her polycarbonate lenses in order to protect the other eye.
- The patient discontinued the glaucoma meds and her IOP has stayed at 11 OD and OS and she has developed no peripheral vision loss nor cupping OS
- She visits the ENT every 6 months for endoscopic evaluation of the sinus due to 5% risk of recurrence

Rita: Pearls

Listen	When evaluating patients, listen to them without prior bias based on what other doctors have said or done
Thorough	Get a complete history yet don't let the history confuse you
Consistent	Be complete in data collection and consistent in doing all tests for yourself

Rita: Pearls

-  Evaluate the results and **confidently** advise of your recommendations even if they are in opposition to another's
-  Remember the patient is who we serve not the insurance company and not another doctor
-  The **golden rule** applies in medicine as much as every other walk of life

Rita: Pearls

- ENT asked me later how I knew to order the MRI? I told him it was only because I listened to the patient and realized that the picture did not make sense.
- Always communicate with the other specialists
- Send letter and make phone call
- Be brief and to the point on the phone and make the letter complete to justify testing in later audits and reviews

 Popular and often used technique that helps people answer the question of why the problem occurred in the first place.

 It seeks to identify the origin of a problem using a specific set of steps, with associated tools, to find the primary cause of the problem, so that you can:



1. Determine what happened.
2. Determine why it happened
3. Figure out what to do to reduce the likelihood that it will happen again.

Root Cause Analysis (RCA)

**Mr. Smith:
Appointment at
Primary Care**

- Mr. Smith walked into the primary care doctors office complaining of decreased vision for the past 2 days.
- Had not been to see the primary care in 3 years so did general work up and gave orders for blood work
- Checked vision on eye chart and was 20/20 OD and OS
- Called Dr. Jasper's office to see if they could see him the same day
- Sent patient over immediately

**Mr. Smith:
Appointment at
OD**

- Pt came in complaining that "My peripheral vision has been off for the past 2 days"
- When arrived for appointment he was on lunch break from work.

**Smith:
History**

59 y.o.w.m
"My central vision is good however I have had trouble with my peripheral vision in the right eye for 2 days and it is not getting better"
No history of pain or floaters or flashes
No numbness or stiffness or pain in head or jaw
Positive history of high cholesterol which is well maintained on medicine he says

**Smith:
Examination**

Best corrected vision is 20/20 OD and OS
EOM's are full with no restrictions
CF show constricted fields 360 degrees OD and FTFC OS
Pupils 4mm with 4+Right APD
SLX is unremarkable except for mild NS OD and OS
IOP is 10 OD and OS

**Mr. Smith:
Differentials**

Retinitis (can be ruled out because blood vessels are in clear focus above the retina)
Central Retinal Artery Occlusion with Cilioretinal Artery Sparing

**Mr. Smith:
Diagnosis**

Discussed case with retina specialist and sent pt to see him the same day. Sent letter to primary telling her of findings

Diagnosed CRAO with cilioretinal artery sparing

- 15% of normal population have cilioretinal artery

Macula has good perfusion because of Cilioretinal artery which is fed from Choroidal circulation

**Mr. Smith:
Diagnosis**

Pt was sent to back to primary care for more in depth work up including Fasting blood sugar, CBC with differential, PT/PTT and for coordination of care

Pt had no symptoms of GCA however we did testing for GCA immediately because of his age (ESR, CRP and platelets) and results were neg.

**Mr. Smith:
Diagnosis**

Primary Care sent pt. to cardiologist for embolic work up:

1. Carotid artery evaluation by doppler ultrasound
2. Transesophageal echocardiogram with bubbles
3. Holter monitoring (checks for Afib over 24 hr's)

Smith: Diagnosis

Transesophageal echocardiogram showed a large patent foramen ovale (PFO) which was not detected with transthoracic echocardiogram

Cardiology scheduled surgery to repair the PFO however when complete work up was done to clear patient for surgery he was found to have a rare form of kidney cancer which would have to be treated first

Mr. Smith: Treatment

CRAO - no treatment is helpful after 90 minutes of non-perfusion.

CRAO - no treatment has been proven to be beneficial even in early diagnosis however some reports of improvement with Ocular massage, Anterior chamber paracentesis, IOP reduction with drops or diamox, breathing into a paper bag

Mr. Smith: Treatment

CRAO - patient was followed every week for 4 weeks checking for Neovascularization of the iris/disc/angle and then every 3 months for one year.

Neovascularization develops in up to 20% of patients usually within 4 weeks of onset

Risk of CRAO in other eye 10%

Patent Foramen Ovale

- o PFO has become a major topic with cardiology and neurology
- o PFO is a hole in the heart connecting the right to the left atrium, with a prevalence of 25%
- o The Foramen Ovale exists in-utero to allow the baby's circulation to bypass the baby's lungs since the baby relies on the mothers oxygenated blood
- o The Foramen Ovale typically closes at birth with the babies first breath

Patent Foramen Ovale

- o 61% of PFO's detected by transesophageal echocardiography are missed by transthoracic echocardiography (per Kramer et al Ophthalmology 2001;108:1461-1464)
- o A high PFO prevalence has been noted in the stroke population and is the most common cause of stroke in those under 55y.o.
- o 40% of patients who have a stroke of "unknown cause" are found to have a PFO

Patent Foramen Ovale

How do PFO's result in stroke?

- o PFOs can allow emboli to pass through the venous circulation into the arterial circulation and cause artery occlusions, Stroke and heart attack
- o PFOs can also allow pooling of blood or stagnant flow which associated with atrial arrhythmias can cause intra-atrial thrombus formation.

PFO & Migraine

The MIST study found that 60% of patients with Migraine with Aura had a PFO.

The migraine is thought to be a result of poorly oxygenated blood getting to the brain or Serotonin escaping through the opening to brain

Early results from the MIST 2 study show a decrease in frequency of Migraine with aura with PFO closure

It has been suggested that PFO closure could be a huge breakthrough in migraine prevention



PFO Treatment

PFO Tx's include:

- Anticoagulant therapy (not a good choice longterm) to prevent stroke
- Open heart surgery to suture the opening closed
- Placing of a device to close the opening. This can be done during cardiac catheterization (a relatively safe procedure which requires a 24 – 48 hr hospital stay)

PFO Closure

There are no FDA approved devices for PFO closure. In patients that need surgery devices are used that are approved for other heart defects. This device folds into a special catheter that is inserted into a vein in the leg and advanced to the heart and through the hole. As it pushes out of the catheter it opens up and closes both sides of the hole like a sandwich. Over time heart tissue grows over it making it part of the heart.

PFO Controversy

PFO surgery is controversial because of the cost and unproven benefit (no evidence based studies). Surgery is typically not performed until a patient has had 2 strokes

Many insurance companies will not pay for the procedure because no clinical trials to prove benefit

Ongoing clinical trials exist to determine when PFO repair is beneficial for prevention of strokes and migraines

Smith: Pearls

-  Immediate testing for GCA is needed if patient is 50 years old or older so refer same day
-  It is critical to coordinate care of these cases with internist also to be certain that all necessary testing is completed and evaluated
-  Consider appointing patient for 2 week follow up phone call even if retina is following patient so that you can monitor care and reassure patient

Instructional Objectives:

- COMPLETE** patient examination/evaluation
 - This case shows the importance of a complete exam including peripheral retinal evaluation on all pts
- CONSISTENT** data collection process for **every** patient
- Applying the golden rule** when determining recommendations and treatments of each patient and **CONFIDENTLY** moving forward to a desired patient outcome
 - Referral immediately and follow up to make certain care was appropriate



Mary: Appointment

Made appointment complaining of black curtain over her only good eye
Told pt to come in now without delay

Mary: History

42 year old Haitian female
Complains of black spots in her vision OD that suddenly occurred this morning at work
History of retinal detachment OS 5 years ago from abuse and never was repaired and now blind in that eye
No pain, No new trauma, No infection OD
No medical problems and no medications

Mary: Examination

Vision is 20/20 uncorrected OD and LP OS
EOM's are full and unrestricted OD
Cover Testing reveals constant exotropia OS from non-use
CF's are FTFC OD
Pupils are equal and round with 4+LAPD
SLE normal OD
IOP normal and equal between eyes

Mary: Examination

DFE shows positive pigment cells in anterior vitreous OD and OS
DFE shows giant retinal tear with rhegmatogenous RD OD and macula on
DFE of OS shows longstanding macula off Retinal detachment

Mary: Differentials

Rhegmatogenous RD
Exudative RD
Tractional RD
Retinoschisis
Choroidal detachment

Mary: Treatment

First I called local retina specialists (2 different ones) who all said that for an uninsured patient on a Friday night it was impossible to get the hospital to open an OR for scleral buckling surgery and for me to send the patient to the closest eye hospital

Mary: Treatment

Called Retina Specialist at closest eye hospital who said to send pt to local ER because she is not in his district
Sent patient to ER right away with a letter and called attending ER Dr and told of pt's condition and that she needed surgery ASAP
Pt called me same night and said Ophthalmology had told her she was fine and no tx needed

Mary: Treatment

Did I doubt my diagnosis? Why did this occur?
Sent patient to local eye hospital as walk in and told her to call me if she wasn't admitted
Pt called me next day and said she had surgery last night and would see me when she was doing better
Pt came back in 2 months for polycarbonate glasses and was 20/20

Mary: Treatment

Pt came back in 4 months with new rx from the retina specialist and told me her vision had suddenly deteriorated and the retina surgeon had given her a new rx for glasses and told her to have it filled
I refracted her and found no change in rx and did OCT which showed CME so sent her back to retina with copy of OCT and note to please start appropriate tx

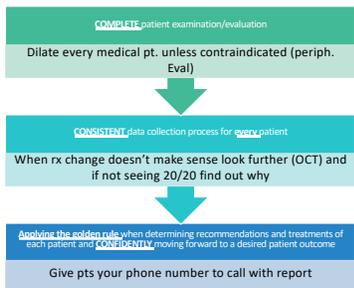
Mary: Pearls

- Call hospital or specialist in advance
- Give patient their records (multiple copies)
- Always tell patient what to expect
- Give patient your cell phone number and tell them to follow up with you afterwards especially if treatment isn't as you have told them
- Make sure you always see patients with F/F or vision loss same day

Mary: Pearls

- Go back to the Golden Rule when deciding how far to go for a patient
- Remain confident in your diagnosis and make certain your patient gets appropriate care
- Stay in contact with your patient until you know they are being cared for appropriately
- Keep a clear mind when doing follow up as well in order to make the right diagnosis
- Take advantage of Technology (OCT)

Instructional Objectives:



External Evaluation

My Welcome routine ever after:

- Shake hands, smile and say "Welcome to the office my name is Dr. April Jasper. Thank you so much for coming in today. How can I help you?"
- Take a seat and listen without interrupting while doing an external evaluation from 4 ft looking at posture, symmetry, head tilt, mood and emotional status
- Slowly move closer as patient is talking to you and look them in the eye showing your concern, intently listening to them and letting them finish their statement

A Patient Centered Culture

In the book "Management lessons from Mayo Clinic" you read that
"Among other behaviors, the physicians are challenged to listen to a patient's opening narrative without interrupting and then to ask is there anything else." They found that their patient satisfaction scores improved from implementing this one behavior.

Study on Listening

Dr. Marvin F. Kraushar wrote in "Risk Prevention in Ophthalmology"

Physicians were divided into 2 groups and asked to elicit chief complaint of a new patient

One group was instructed not to interrupt until pt finished responding.

70% of these pts took less than 1 minute to complete their statement.

Study on Listening

77% of the pts in the 2nd group were interrupted by the Dr. after an average of only 18 seconds, and 98% of them never were able to complete their statement

Those pts that were interrupted had a lower opinion of the quality of their care than those who were allowed to speak without interruption

• Beckman HB, Frankel RM. The effect of physician behavior in the collection of data. Am Intern Med 1984;101:692-696

Co-Management Tips

- Fax Notes and give to patient
- Phone call in case of emergencies
- Differential diagnosis
- Recommendations for testing
- Recommendation for referral and to whom and for what
- Recommendation for return visit

Matthew - Appointment

Pt called to schedule appointment for a complete eye health evaluation

Pt said he feels fine just has spots in his eyes and blurred vision for past month

When making the appointment he informed the staff that he is afraid of doctors and so never goes to appointments.

Matthew - History

- 31 year old white male
- Chief Complaint is that he has blurred vision at distance and near and spots in his vision for a month that occurred suddenly
- Pt says he has not seen a primary care doctor in a few years however feels fine
- Family ocular and medical history is negative
- He takes no medication and works out at the gym every other day

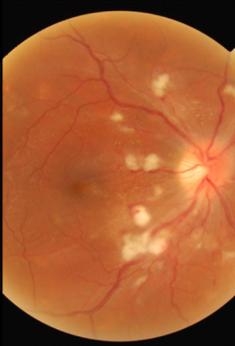
Matthew - Examination

- BVA OD 20/50 OS 20/30 PH shows no improvement
- EOM's: Normal without restrictions OD and OS
- CT: WNL
- CF: FTFC OD and OS
- Pupils: (+)D/C no APD
- SLE: WNL OD and OS
- IOP: 14 OD 16 OS



Matthew - Examination

- Bilateral Optic Disc Swelling
- Cotton Wool Spots in Posterior Pole OD>OS
- Striae
- Very few retinal hemorrhages



-  CRVO-usually unilateral & more heme with greater loss of VA
-  Radiation Retinopathy-Hx of irradiation
-  Malignant Hypertension
-  Purtscher's Retinopathy(compression injury to the chest, head or lower extremities)

Matthew - Differentials

Purtscher's-like Retinopathy: (no HTN or other retinal HTN changes)

- Acute Pancreatitis
- Fat embolization
- Amniotic Fluid embolization
- Pre-eclampsia
- HELLP syndrome: hemolysis, elevated liver enzymes & low platelets
- Vasculitic diseases such as Lupus

Matthew-Treatment

-  Emailed photos to Retina Specialist and discussed over phone
-  Most likely diagnosis: Purtscher-like retinopathy
-  Sent patient immediately to ER after finding his BP to be 260/150
-  Blood tests: FBS, Glycosylated hemoglobin, CBC with differential, platelets, PT/PTT, ESR, lipid profile, homocysteine, ANA, FTA-ABS

Matthew-Treatment



All testing came back negative except Blood Pressure



Pt was kept in hospital until BP controlled (5 days)

Matthew - Discussion



Final Diagnosis: "Hypertensive Emergency" previously known as "Malignant Hypertension"



Refers to marked hypertension with retinal hemorrhages, exudates, or papilledema.



There may also be renal involvement (hypertensive nephrosclerosis) and/or neurologic (hypertensive encephalopathy, etc) and/or cardiopulmonary involvement.

Final diagnosis: Hypertensive Emergency

Usually associated with diastolic pressure above 120

Must be associated with end-organ damage

More common in men than women

The average age of diagnosis is 40

Final diagnosis:
Hypertension
Emergency

Most often occurs in patients with long-standing uncontrolled hypertension, many of whom have discontinued their HTN meds

Underlying Renal artery stenosis is frequently present, especially in white patients

Hypertensive
Emergency

Treatment of BP must be immediate yet gradual in order to prevent stroke/ischemia

The Optic Nerve demonstrates autoregulation so there is an adjustment in perfusion based on the HTN

A sudden decrease in BP will reduce perfusion to the ON and CNS as a result of their autoregulatory changes, resulting in infarction of the Optic Nerve and other parts of CNS

Hypertensive
Emergency

Without therapy, one-year survival is only 10 – 20% which explains the origin of the term Malignant HTN in the 1920's

With present therapy the survival rate at 5 yrs is 70 - 90% depending on the study

Pts with chronic kidney disease have historically had a lower survival rate but these numbers are in a constant state of change with improved HTN management

Hypertension and Eye disease:

Through autoregulation, retinal arteries respond to elevation in BP by constricting

If mild HTN then typically no ocular symptoms will be noticed by the patient

If mild HTN then minimal or no funduscopic changes are seen as well

Funduscopic Changes:

All are caused by thickening of the small arterial and arteriolar walls (arteriolar sclerosis)

- Focal and diffuse narrowing of the retinal arteries (most reliable early sign of HTN)
- Increase in the arterial reflex
- Arteriovenous crossing changes

Hypertensive Emergency:

- Optic Disc swelling and a macular star can occur as a result of the extreme ischemic arteriolar and capillary permeability changes in the retina and optic nerve head

Matthew-Treatment

Pt saw retina specialist one more time in the office at which time his BP was 120/70 and retinal findings were resolving and BVA was 20/30 OD and OS

Neither the retina specialist nor I have been successful in getting the patient to schedule follow up visits

Matthew-Discussion

Pt was very nervous during examination

He had no pertinent medical history, however did say he had not been to a doctor in a long time because he doesn't like doctors

I used the retinal photos to discuss the findings with Matthew and the need for further testing

Once I had him calm enough to agree to go, I stopped all discussion and testing and gave him a map and phone number and sent him on his way

Matthew - Discussion

I did not take Matthew's BP in my office

When I saw this retinal picture I was extremely concerned about the patient and called specialist immediately who agreed that he should leave immediately

Retina specialist is next door to hospital so we thought it best for him to be seen there and then seen at the hospital so he could order correct tests

Matthew–Best Interest of the Patient

In a life-threatening case like this it is imperative to coordinate care with internist and specialist

It is imperative to keep the patient calm especially when they have a fear of doctors

Retinal photos can really help with patient education and adherence to treatment

It is extremely helpful to be able to adapt your style of communication to the needs of the patient at that moment

Matthew-Discussion

- I recognized that I had a lot of unanswered questions about HTN
- I began to do more research on HTN and determined that I would know more for the next patient

Matthew - Discussion

I did not measure BP routinely because abnormal readings created problems, I did not know how to address

I asked the retina group if they measured BP regularly and they said no

Should we measure BP regularly and if so then what do we do with high readings?
