SOPHIE BAKRI: So you've all heard today how to treat Wet AMD. And that's all well and good as long as you know for sure that it is Wet AMD, because the results that have been quoted and that approximately 50% fluid resolution in the CAT trial is for patients who actually have Wet AMD. Those patients have been seen by retina specialists and vetted by reading centers, so you know for sure they do. But many times we get referred patients in who've been treated with anti-VEGF therapy who don't respond to treatment. And the question that I'd like you to think about is, are these patients truly non-responders, or is it just time to revisit the diagnosis?

AMD can actually be very tricky to diagnose and I would highly recommend that you are sure of the diagnosis before subjecting the patient to what could be a lifetime of intra-vitriol injections. So just to recap on the differential diagnosis of AMD, there's high myopia, ocular Histoplasmosis, and Adult Onset Foveomacular Dystrophy, Basal Laminar Drusen, Central Serious Chorioretinopathy, and Juxtafoveal telangiectasia.

Now I've put these on the first slide because these are the most common things that you have to think about. There are other things such as, Sorsby's fundus dystrophy, pattern dystrophy, agioid streaks, cone-rod dystrophy, Rubella retinopathy, and Stargardts disease. Less common, but you should also think about them. Also on the list is uveitic entities, such as punctate inner choroidopathy, serpiginous choroidopathy, and a very rare disease called North Carolina macular dystrophy. Choroidal osteomas have also been mistaken for AMD, as well as Best disease and dominant drusen.

So with this in mind, I'm going to go through a few cases that I've seen here at Mayo. And the first patient is a 56-year-old white female who complains of slightly blurry vision. 20/30 in the right and 20/40 in the left. And what you notice on the color photograph is what looks like drusen, in some sub-retinal fluid, and pigment changes-- a slightly yellowish appearance here in the center. Similar findings on the left eye, but a more circumscribed yellow lesion. So auto fluorescence shows a few abnormalities but nothing really distinctive just yet. This is the infrared. Again, auto fluorescence here shows an increase in auto fluorescence, which we can see with some types of vitelliform form yellowish material.

So the fluorescein angiogram here is pretty diagnostic. Because all of a sudden all these drusen emerge-- the starry sky pattern that wasn't seen before on color photography. The fluorescein angiogram shows some fluorescence but it's difficult to tell at this point if this is leakage or just filling of this vitelliform lesion. And same thing in the left eye.

Now this is very frequently mistaken for leakage from choroidal neovascularization. What the OCT shows is some material, the vitelliform material underneath the retina as opposed to a clear PED. And you see the same thing in the left eye. This is basal laminar drusen with a vitelliform lesion, and these do not respond to anti-VEGF therapy. Now the natural history of these, given no treatment and given a long enough follow up, is for this lesion here to break down and cause geographic atrophy. So actually if you treat the patient with anti-VEGF therapy for long enough, you might think that you dried up the patient and caused the vision to get worse. Whereas this is in fact a breakdown of the vitelliform lesion.

The next patient is a 33-year-old white male followed for an old idiopathic CNV. 20/60 in the right eye, 20/40 for eight years, and now referred for a pigment epithelial detachment. You see some fluid and some yellowish material in the macula. And again, a lot more yellowish material in the left eye. Auto fluorescence here is pretty characteristic because you see the increase in auto fluorescence, and especially in the left eye.

This is a fluorescein angiogram, but I would say that the auto fluorescence in this case is most characteristic. The OCT does show some sub0retinal fluid, and here the vitelliform yellow-like, yolk-like material, and the same thing on the left eye, you can the yolk-like material. So this is in fact Best disease in a 33-year-old white male. And genetic testing was consistent with Best disease, as was the EOG.

So the next lady is a 61-year-old white female complaining of vision distortion in the left eye. Again, referred for an RPE detachment in the left eye. This time, she has 20/20 vision in the right eye and 20/40 in the left eye. It doesn't look like much here on the color photo, but here you start to appreciate in the left eye that she has what appears to be swelling in the macula.

If you look around the nerve you'll also see what appears to be faint areas of blood and the same thing around the nerve in the left eye. So if you look at the OCT again, you might think that this is Wet AMD because of the PED here. And this is what the fluorescein angiogram shows. This is the early phase. You can actually see around here, there's some hyperfluorescence. And you see it a little bit better, some leakage around the nerve. And again, this is the left eye, the eye she complained about. And you see this leakage, which looks like a polyploid leakage, and it leaks into the pigment epithelial detachment.

ICG is an excellent diagnostic tool for these cases. And you can see the extent of the polyps. So this is Polyploidal Choroidal Vasculopathy, which is very commonly mistaken for Wet AMD. It's often thought to occur more in Asians, but you'd be surprised how many times we see it in the Caucasian population. So initially I treated her with intravitriol bevacizumab and saw her a month later, but she got worse-- she got to 20/70 and the PED was actually higher.

So then I decided to do focal laser to the polyploidal vessels that were superonasal to the fovea, in other words, the [INAUDIBLE], and I saw her back in a month. A month later, she had a PED. It was a little flatter, still 20/40. However, I didn't retreat her because the fluorescein angiogram showed no leakage; this leaky lesion that was feeding into the PED had now closed off. Three months later, she was completely flat.

Next patient was referred in with Wet AMD after receiving five monthly anti-VEGF injections of bevacizumab and ranibizumab. She was 20/200 in the right eye and 20/25 in the left eye. What you see here, it looks like a very large area of either sub-retinal fluid or a pigment epithelial detachment where the blood has settled, almost like a hypopyon, and the suspicion that the leak is coming from this area.

This is the left eye, there may be what looks like drusen. Again, we have a PED with sub-retinal fluid in the right eye. The left eye's normal. And here, you see the feeder that's feeding into the PED. So despite five anti-VEGF injections, there was no improvement. And again, you see something around the nerve.

So I performed a focal laser to the choroidal neovascular membrane in the right eye, right here. Eight weeks later she still looked the same. However, fluorescein angiography was very useful, in that it told us that the CNV was closed. Three months later, she was 20/30. Again, the CNV was closed, but this time she was completely flat. So instead of subjecting the patient to a lifetime event of anti-VEGF therapy that wasn't going to work, it was important to find the right diagnosis and initiate the right treatment.

The next patient is a 52-year-old white female complaining of blurry vision. She's 20/50 in the right eye and 20/30 in the left eye. Referred for swelling in the retina, possible Wet AMD. Nothing unusual here on the color photo nor on the left eye, but we start to see leakage here temporal to the fovea, from what appears like a network of capillaries. And this leaks intensely, and you can see how this might be mistaken for a classic choroidal neovascular membrane.

We have a similar pattern on the left eye. What we see on the OCT is an outer retinal defect and what looks like cysts. And again, could go along with a picture of cystoid macular edema, but these are in fact, lamellar holes with sort of straight lines between them as opposed to rounded cysts. And again, look at the elongation here of this on the left eye.

So this is actually mactel juxtafoveal telangiectasial, type 2. It is actually associated with lamellar holes, it can leak on fluorescein angiography. Right now, there are a number of clinical trials going on to find out the best way to treat these patients. But anti-VEGF therapy may help a little bit, but the OCT will not change. And occasionally the fluorescein can get better. But they actually do very well without treatment. They tend to remain stable.

So here's another lady, again referred for Wet AMD and pigment changes whose 20/70 in the right and 20/400 in the left eye. And sure, she has pigment changes, what could look like lipid. But actually these are intra-retinal crystals and, again, pigment changes in the--