



# Differentiation of Culture Positive Endophthalmitis From Non-infectious Endophthalmitis Following Intravitreal Anti-VEGF Injections

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## Purpose

Neovascular age-related macular degeneration (N-AMD) is the most common cause of legal blindness in the western world.<sup>1</sup> Intravitreal pan anti-VEGF agents, bevacizumab (Avastin) and ranibizumab (Lucentis) are currently the most effective treatment for N-AMD.<sup>2-4</sup> Cases of culture positive endophthalmitis and sterile inflammation have been reported after intravitreal injection of anti-VEGF agents.<sup>5-10</sup>

The purpose of this communication is to describe differences in clinical findings in cases of culture positive and sterile inflammation following intravitreal injection of anti-VEGF injections.

## Methods

We performed a retrospective chart review of ten eyes of ten consecutive patients suspected of acute endophthalmitis following intravitreal injection of either Avastin or Lucentis for N-AMD. All eyes were initially treated with tap and inject procedure. Gram stain and cultures were performed on both aqueous and vitreous samples followed by intravitreal injection of vancomycin (1 mg/0.1mL), ceftazidime (2.25 mf/0.1 mL) and dexamethasone (400 mcg/0.1 mL).

Patient's age, time to presentation, presenting VA, pain score, severity of conjunctival congestion, corneal edema, hypopyon, retinal hemorrhages were compared between culture positive (4) and culture negative (6) eyes.

## Results

Table 1: Culture Positive Cases

Age/Sex	Injection	Days Following Injection	Vision @ Presentation	Pain Scale (Mild, Mod, Severe)	Hypopyon	Retinal Hemorrhages	Organism	Final VA
83/F	Avastin	4	20/400	2	Yes	Yes	S aureus	20/30
87/F	Avastin	3	CF	1	No	Yes	Coag - Staph	20/40
97/M	Avastin	4	CF	3	Yes	No View	S capitis	CF
73/M	Avastin	12	HIM	2	Yes	Yes	S aureus	CF

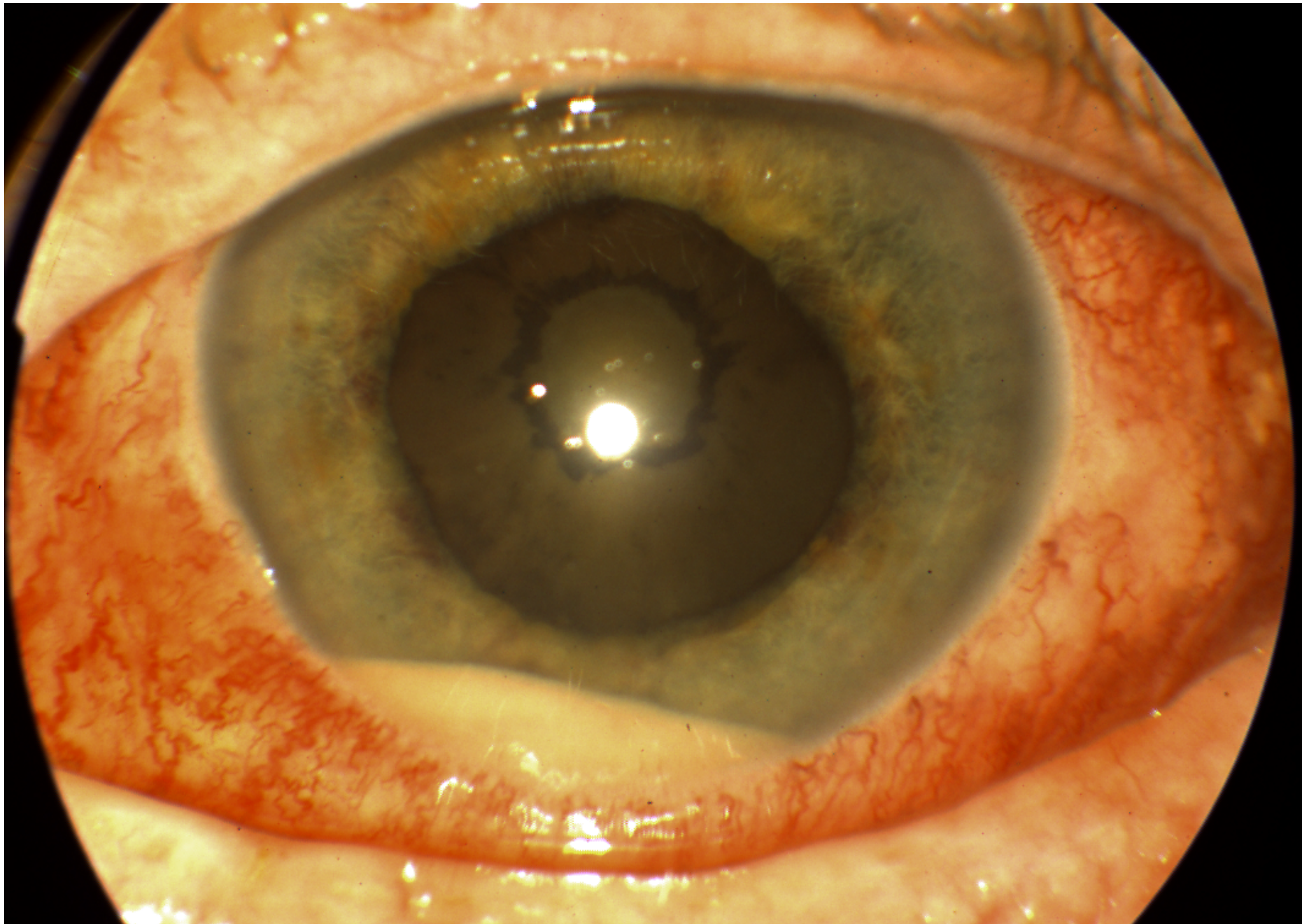
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Table 2: Culture Negative Cases

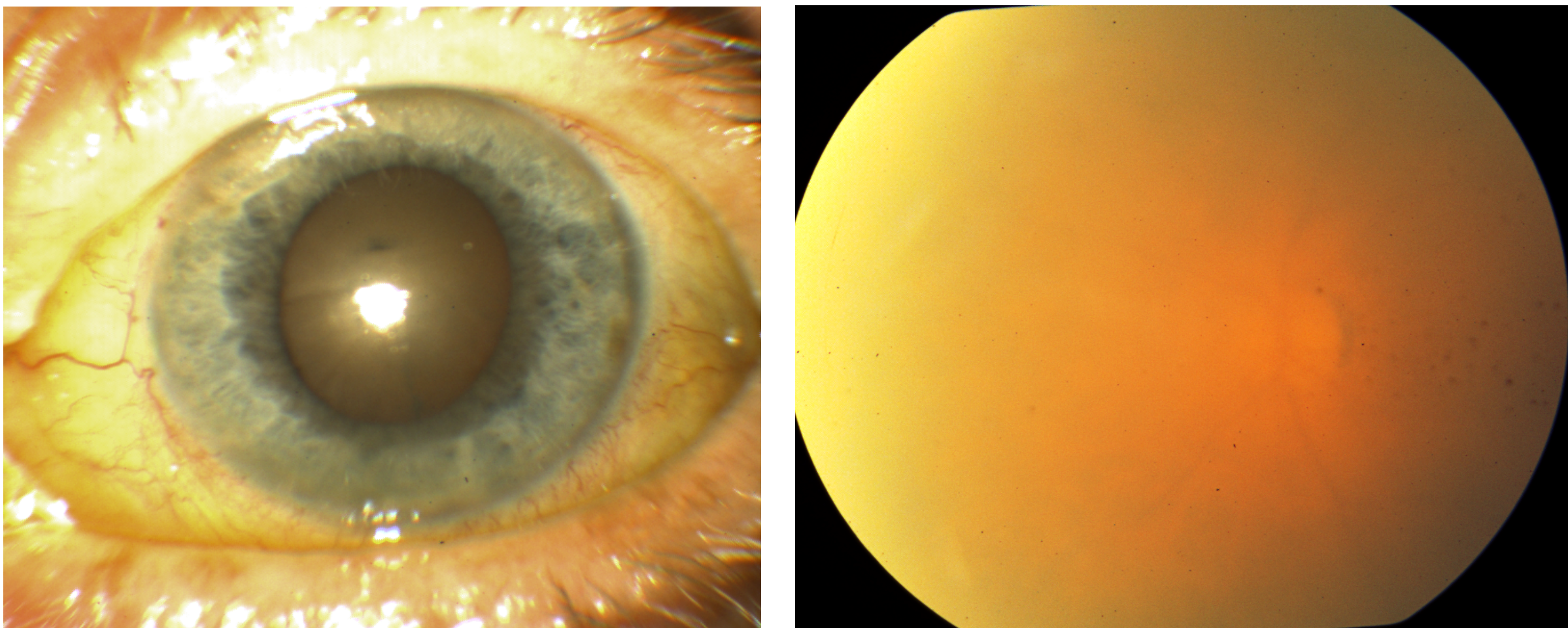
Case	Age/Sex	Injection	Days Following Injection	Vision @ Presentation	Pain	Hypopyon	Retinal Hemorrhages	Final VA
1	66/M	Avastin	1	CF	1	No	No	20/400
2	86/M	Avastin	4	CF	3	No	No	20/60
3	72/F	Avastin	1	CF	2	No	No	20/60
4	84/M	Lucentis	18	20/200	0	No	No	20/60
5	83/M	Avastin	2	CF	0	No	No	20/200
6	82/F	Avastin	5	20/200	0	No	No	20/20

Table 3: Comparison of Two Groups

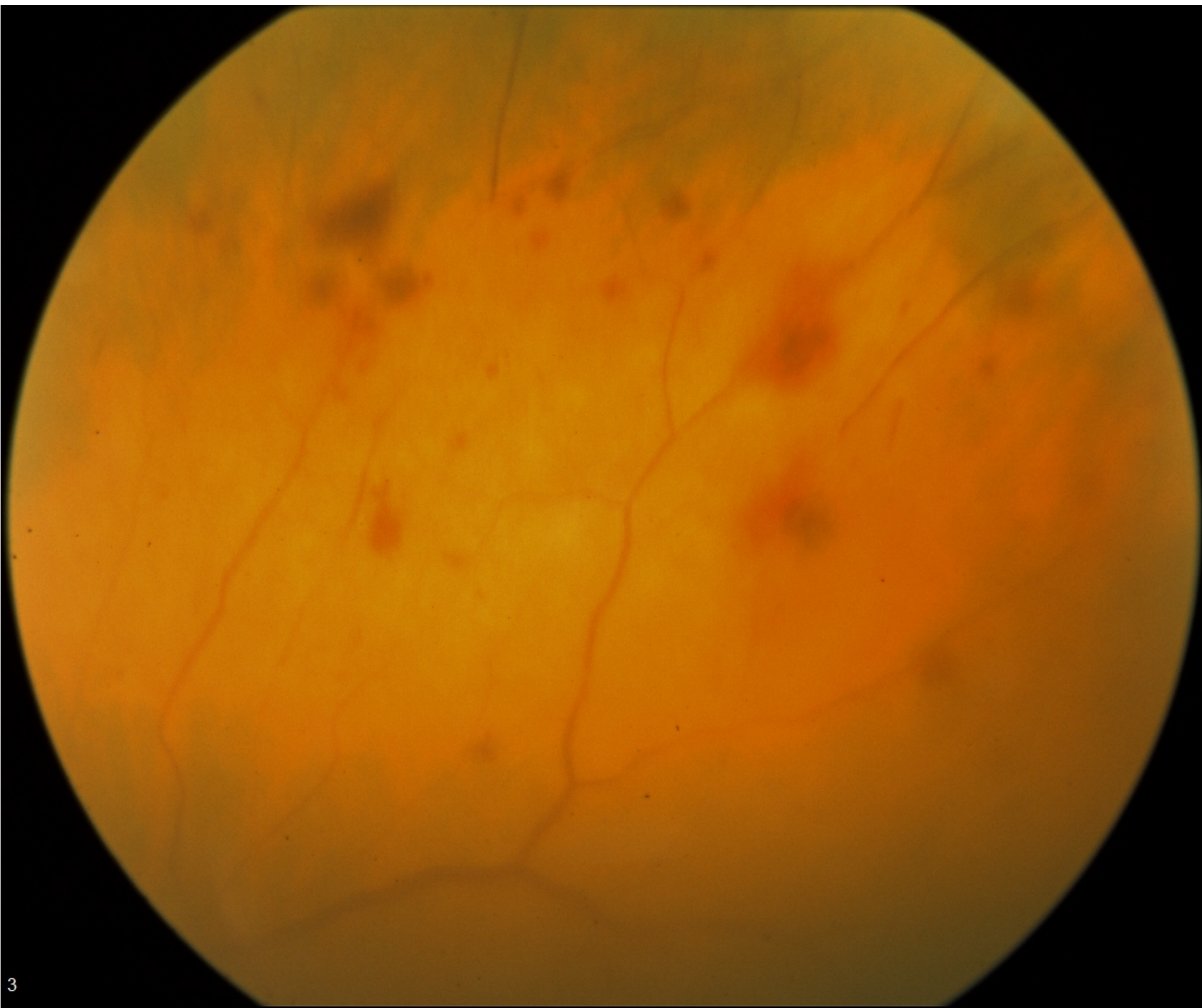
	Culture + n=4	Culture - n=6	p value
Age (mean+/-SD) years	85+/-9.9	79+/-8	0.3
Days since injection mean+/-SD range	5.75+/-4.19 3-12	5.16+/-6.49 1-18	0.88
VA at presentation logMAR			
Range	1.3-2	1-1.6	
Mean+/-SD	1.6+/-0.29	1.4+/-0.31	0.28
Pain Score	2+/-0.81	1+/-1.26	0.2
Conjunctival congestion	3+/-0	0.5+/-0.83	0.0004*
Hypopyon	3	0	0.033*
Retinal Hemorrhages	3	0	0.033*



Case 4, Culture +. Presentation. Note hypopyon and marked conjunctival congestion



Case 6, Culture -. Presentation. Anterior segment (left) shows mild conjunctival congestion and no hypopyon. Fundus (right) dense vitritis, but no retinal hemorrhages



Case 3, Culture +. Two weeks after tap and inject procedure. Typical appearance of retinal hemorrhages

## Conclusion

Hypopyon was noted in ¾ culture positive, and 0/6 culture negative eyes, retinal hemorrhages in ¾ culture positive and 0/6 culture negative eyes.

Both hypopyon and retinal hemorrhages had specificity of 100%, but sensitivity of 75%. However, using OR criteria, patients with either hypopyon or retinal hemorrhages had 100% sensitivity and specificity for being culture positive. Patient age, time to presentation and pain score were not statistically significant between the two groups. Conjunctival congestion was more severe in culture positive group.

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