Vitreous and Chorioretinal Lesions in Injection Drug Users Hospitalized with Bloodstream and Related Infections

Margaret A. Greven, MD; Jessica Weinstein, MD; Katherine A. Tsamis, MD; Scott A. Vadala, MD; Erin Barnes, MD; James Peacock, MD; Craig M. Greven, MD

Wake Forest™ School of Medicine

Disclosures

Nothing to disclose

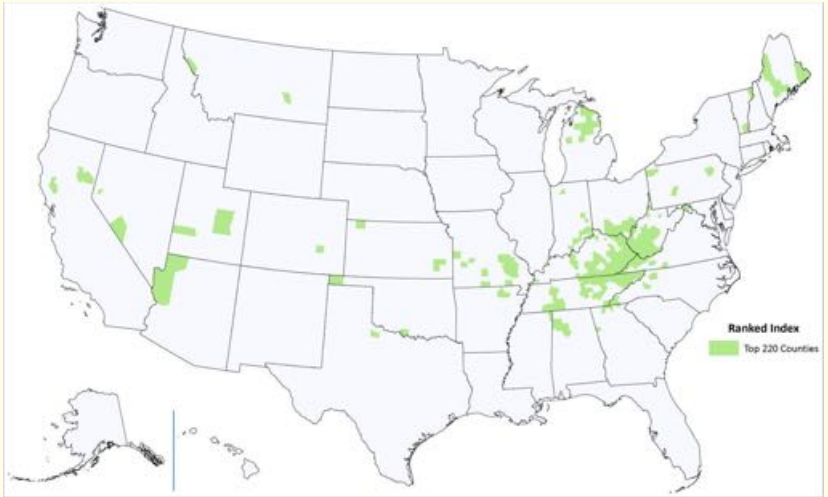
Summary

- Prospective single-center study evaluating the prevalence of vitreous and chorioretinal lesions in patients hospitalized with systemic infections related to injection drug use
- 15.6% of subjects had vitreous and/or chorioretinal involvement in one or both eyes
- Identification of patients with asymptomatic ocular involvement did not alter treatment

Introduction

- In 2017, the opioid epidemic was declared a public health emergency due to increasing opioid abuse and resultant deaths from overdose

- Surge in infectious diseases, such as HIV, viral hepatitis, infective endocarditis, and skin and soft-tissue infections



Source: Van Handel MM et al. County-level vulnerability assessment for rapid dissemination of HIV or HCV infections among persons who inject drugs, United States. J Acquir Immune Defic Syndr. 2016; 73(3): 323-331.

Purpose

In injection drug users hospitalized with bloodstream infection and/or related metastatic foci of infection

- To investigate the prevalence of and characterize vitreous and chorioretinal (CR) lesions,
- To correlate symptoms with ophthalmic involvement,
- To identify causative organisms

Methods

- Prospective, single-center study
- Pts admitted with systemic infection due to IDU
  - >18 years old
  - Consent
  - IDU within 3 months
- Complete eye exam including DFE within 72 hours of enrollment

Methods

Also Recorded:

- Gender
- Age,
- Race
- Drug of choice (DOC)
- Co-infection with hepatitis B (HBV), hepatitis C (HCV) or HIV
- Pathogen causing systemic infection
- Type of systemic infection
- Hx infection related to IDU

Wake Forest School of Medicine

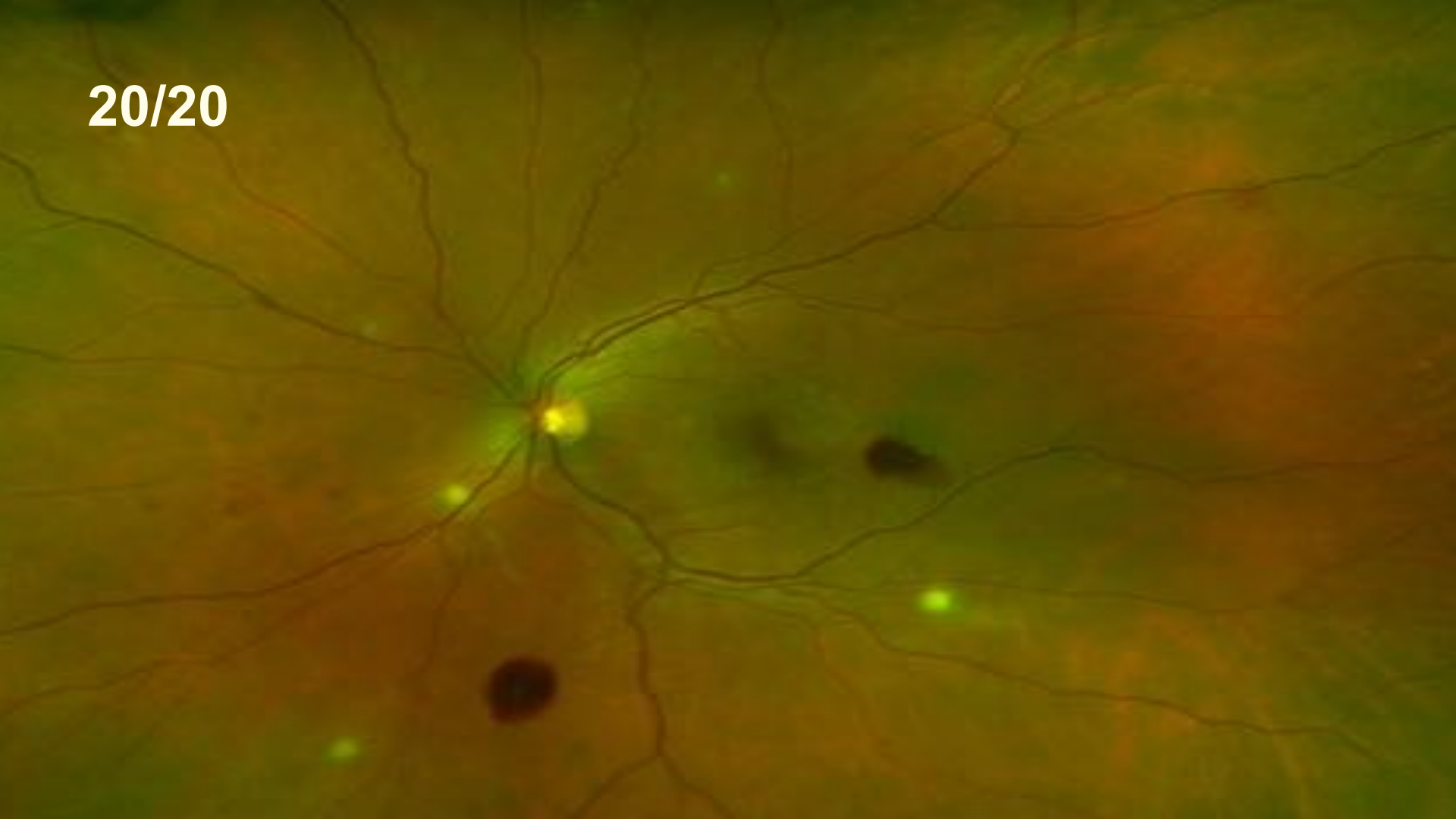
Results: Patient Characteristics

Characteristic	n=96
Female gender (%)	48/96 (50%)
Age (years)	35
Race (%)	90/96 (93.8) white 4/96 (4.2) black 2/96 (2) other
LogMAR VA OD (Snellen)	0.106 (20/25) Range 20/20-HM
LogMAR VA OS (Snellen)	0.174 (20/30) Range 20/20-HM
Admission to Exam (days)	7
Ocular findings related to infection (%)	16/96 (16.7%)

Results: Ocular Findings

Ocular finding	N=16
Cotton wool spot (%)	3 (18.8)
Intraretinal/white-centered hemorrhage (%)	9 (56.3)
Subretinal infiltrate/abscess (%)	8 (50)
Endophthalmitis (%)	5 (31.3) 1 OD, 4 OS


20/20


20/20

Results

	Ocular lesions (n=16)	Control (n=80)	p-value
Female gender (%)	6/16 (38)	39/75 (52)	0.29
Age (years)	32.5	33	0.9
Race (nonwhite)	0	5/75 (7)	0.98
Ocular symptoms	7/16 (44)	9/80 (11)	0.0038
VA LogMAR (Snellen) OD	0.25 (20/36)	0.078 (20/24)	0.1
VA LogMAR (Snellen) OS	0.65 (20/90)	0.078 (20/24)	0.0067

Microbiology:

		Ocular lesions (n=16)	Control (n=80)	
Gram (+) bacteria	MRSA	7	36	P=0.89
	MSSA	3	20	
	Coagulase negative staph		2	
	Group A Beta hemolytic strep		6	
	Alpha hemolytic strep	1	4	
Gram (-) bacteria	Enterococcus faecalis		3	
	Serratia	1	3	
	Haemophilus parainfluenzae	1		
	Bacillus		1	
Fungus	Candida albicans	2		
	Candida parapsilosis		1	

Drug of Choice

Drug of Choice	Ocular lesions n=16	Control n=80	P-value
			0.036
Cocaine	2 (13)	1 (1)	
Heroin	5 (31)	49 (61)	
Methamphetamine	7 (44)	16 (20)	
Opiate	2 (13)	14 (18)	

Drug of Choice	P value
M vs. C	0.24
M vs H	0.031
M vs O	0.22

Results

	Ocular lesions (n=16)	Control (n=80)	p-value
HBs AG	0	4/74 (5)	>0.99
HCV Ab	12/15 (80)	62/78 (79)	0.96
HCV RNA	6/13 (46)	34/61 (56)	0.55
HIV	0	1(1)	>0.99
Past IDU-related infection	6 (38)	37 (46)	0.59

	Ocular lesions (n=16)	Control (n=80)	p-value
Infectious endocarditis	12 (75)	44 (55)	0.15
Bloodstream infection (BSI)	1 (6)	9 (11)	
Metastatic foci of infection (MFI)	2 (13)	7 (9)	
BSI +MFI	1 (6)	20 (25)	

Summary

- In our 91 patients with 96 separate hospitalizations, 15.6% prevalence of chorioretinal findings
- Most frequently seen findings were IRH, followed by CR infiltrates/microabscesses, endophthalmitis, and CWS
- 56% of patients with ophthalmic involvement asymptomatic
  - Asymptomatic patients did not require ocular therapy
- *S. aureus* most common causative pathogen
- Presence of ocular symptoms, worse visual acuity, and drug of choice (methamphetamine) were correlated with the presence of vitreous or chorioretinal findings

Thank you