



# THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

# Ocular candidiasis in patients with candidemia diagnosed by T2Candida<sup>®</sup> versus blood culture

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## Background

- Current guidelines recommend dilated fundoscopic exam (DFE) in all patients with candidemia<sup>1</sup> although the usefulness of this practice has been disputed<sup>2</sup>
- Manifestations of ocular candidiasis (OC) range from isolated chorioretinitis to severe vitritis/endophthalmitis with some patients requiring intravitreal injections of antifungals or vitrectomy<sup>3</sup>
- T2Candida (T2C) is a magnetic resonance-based assay for the rapid diagnosis of five *Candida* species with high sensitivity and specificity compared to blood culture (BC)<sup>4</sup>

## Objectives

To compare characteristics and outcomes of patients diagnosed with candidemia by BC vs. T2C who had evidence of ocular candidiasis on ophthalmologic exam

## Methods

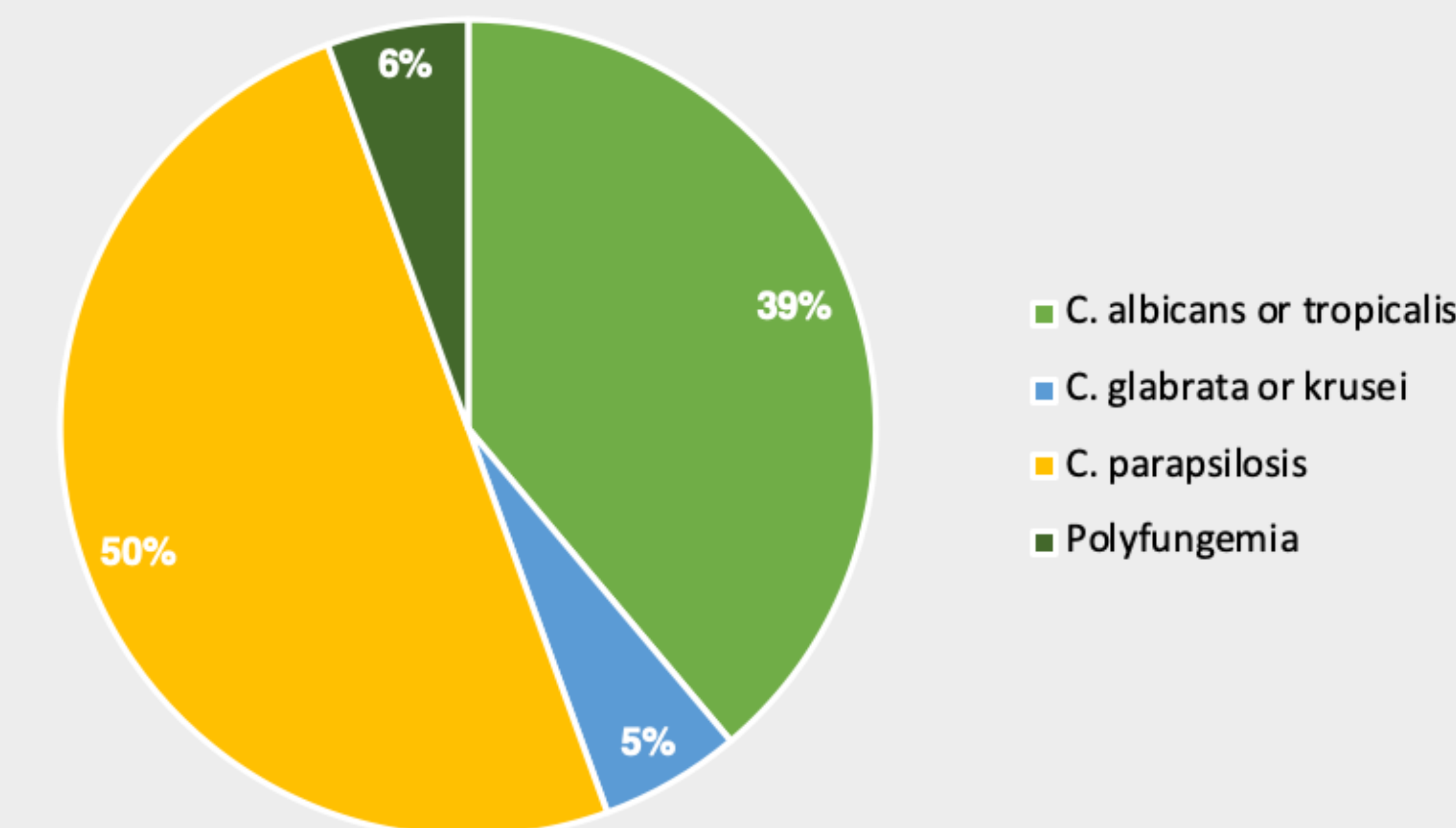
- Retrospective review of patients admitted to UAB Hospital from 2016-2019 with either 1) positive BC for *Candida* species or 2) positive T2C without positive BC
- Among patients who underwent DFE, compared T2C+ and BC+ groups in terms of type of ocular involvement (chorioretinitis vs. vitritis), presence of visual symptoms, need for intravitreal injection, and 30-day mortality

## Results

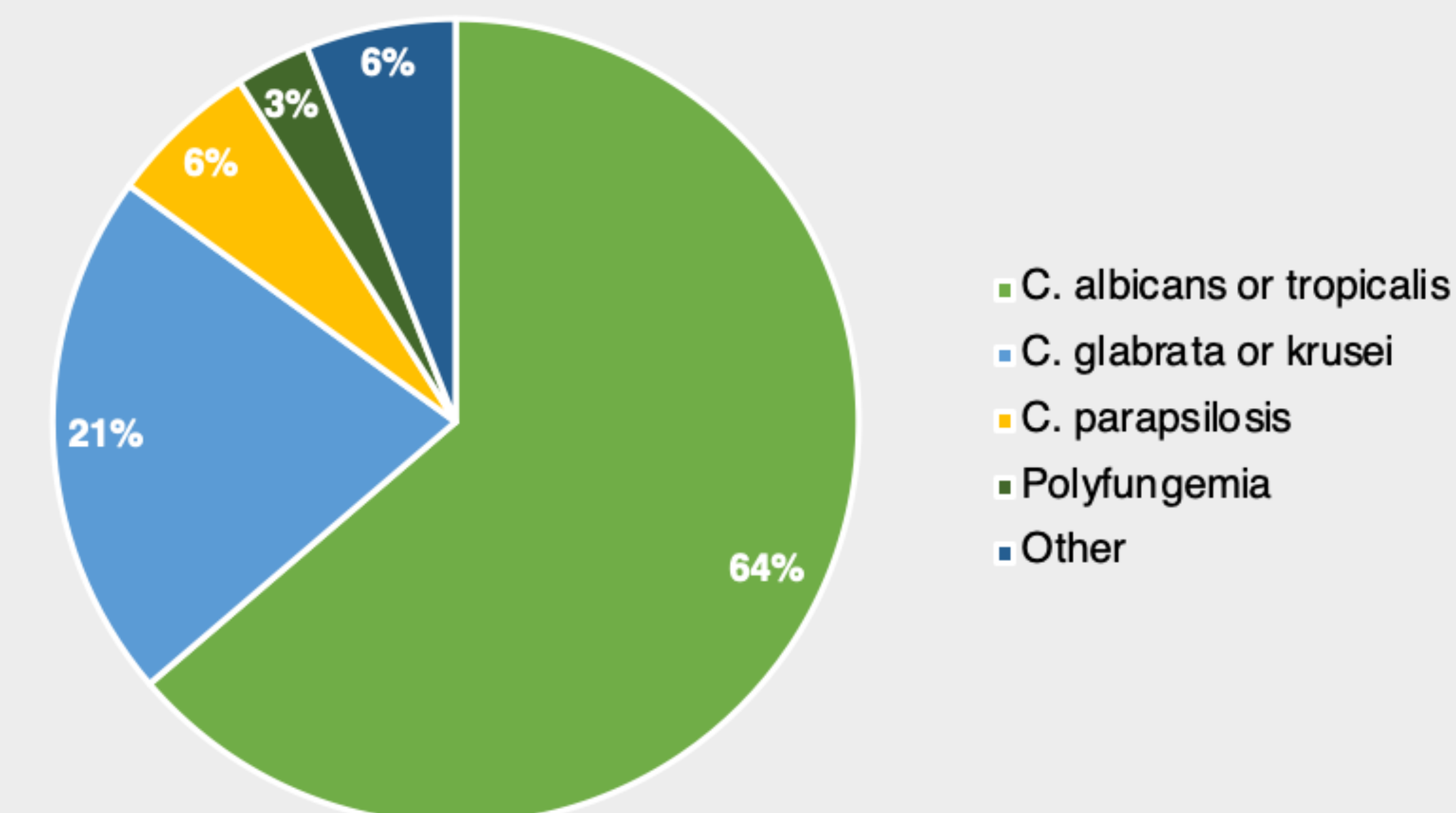
**Table 1.** Demographics and risk factors

	T2C+ (n=18)	BC+ (n=33)	P-value
<b>Age – yr.</b>			
Mean (Range)	46.4 (27 – 70)	56.3 (22 – 86)	<b>.0347</b>
Median	47.5	60	
<b>Gender – no. (%)</b>			
Male	7 (38.9)	15 (45.5)	.682
<b>Race or ethnic group</b>			
White	10 (55.6)	20 (60.6)	.731
Black	8 (44.5)	12 (36.4)	.888
Hispanic/Latino	0 (0)	1 (3)	.673
<b>Location at time of collection</b>			
ICU	11 (61.1)	12 (36.4)	.089
Floor	6 (33.3)	12 (36.4)	.832
ED	1 (5.6)	9 (27.3)	.074
<b>Risk factors</b>			
Broad-spectrum antibiotics	15 (83.3)	24 (72.7)	.425
CVL	13 (72.2)	24 (72.7)	.940
Removed if present	12 (92.3)	19 (79.2)	.315
ICU >72 hrs.	12 (66.7)	9 (27.3)	<b>.006</b>
Immunosuppression or steroids	7 (38.9)	11 (33.3)	.671
Mechanical ventilation	5 (27.8)	2 (6)	<b>.031</b>
Dialysis	3 (16.7)	4 (12.1)	.624
Total parenteral nutrition	1 (5.6)	10 (30.3)	<b>.049</b>
Intra-abdominal surgery	1 (5.6)	4 (12.1)	.497
Necrotizing pancreatitis	0 (0)	1 (3)	.463

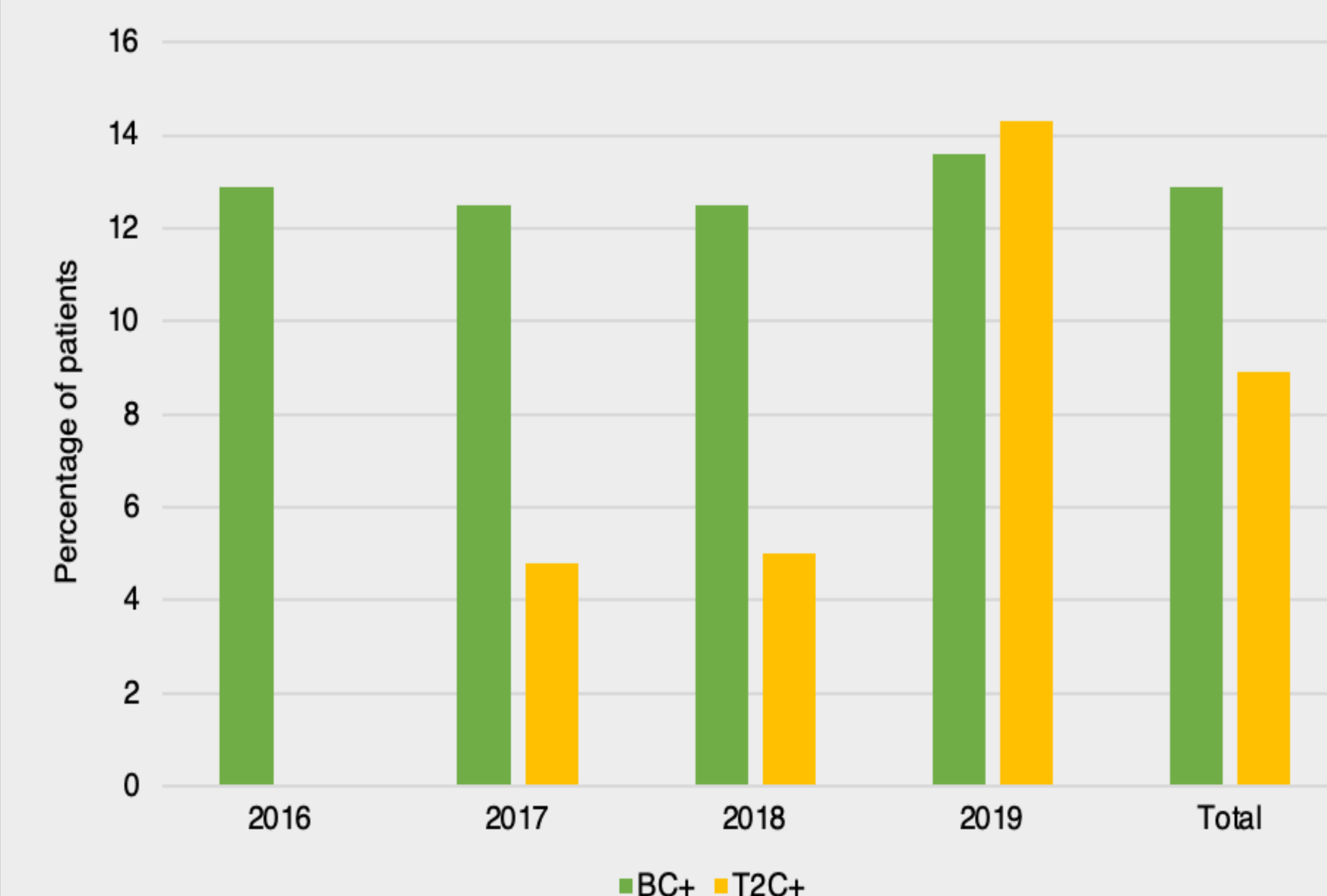
**Figure 1.** T2C+ patients with OC by *Candida* species



**Figure 2.** BC+ patients with OC by *Candida* species



**Figure 3.** Rates of ocular candidiasis by year



**Table 2.** Episodes of candidemia and ocular candidiasis by year

	2016	2017	2018	2019	Total
Total BC	103	74	83	100	360
DFE performed (%)	62 (60.2)	48 (64.9)	64 (77.1)	81 (81)	255 (70.8)
Total BC with OC (%)	8 (12.9)	6 (12.5)	8 (12.5)	11 (13.6)	33 (12.9)
Total T2C	27	60	80	121	288
DFE performed (%)	10 (37)	42 (70)	60 (75)	91 (75.2)	203 (70.5)
Total T2C with OC (%)	0 (0)	2 (4.8)	3 (5)	13 (14.3)	18 (8.9)

## Results, cont.

- 33 BC+ patients (12.9% of those tested) and 18 T2C+ patients (8.9%) had evidence of ocular candidiasis (p=0.177)
- 4 T2C+ patients (22.2%) and 3 BC+ patients (9.1%) received one or more intravitreal injections for vitritis (p=0.2)

## Conclusion

- Similar rates of OC were found in both groups with no significant differences in symptoms, type of eye involvement, need for intravitreal injection, or mortality
- Higher than expected proportion of T2C+ patients with *C. parapsilosis* raises concern for species misidentification or false positive results
- We argue that DFE should be performed in all patients with candidemia including those with positive T2C and negative or no BC

## Limitations

- Observational, retrospective study
- No cases of proven ocular disease
- No data on post-discharge ophthalmologic outcomes or DFE findings

## References

- Pappas PG, et al. Clinical practice guideline for the management of candidiasis: 2016 update by the Infectious Diseases Society of America. *Clin Infect Dis* 2016; 62:e1-50.
- Breazzano MP, et al. Utility of ophthalmologic screening for patients with Candida bloodstream infections: A systematic review. *JAMA Ophthalmol* 2019; 137(6): 698-710.
- Oude Lashof AML, et al. Ocular manifestations of candidemia. *Clin Infect Dis* 2011; 53:262-68.
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