

CHANGING TRENDS OF CANDIDEMIA IN COLOMBIAN TERTIARY CARE HOSPITALS FROM 2008 TO 2014

Pinzón PL¹, Leal AL^{2,3}, Zapata CA¹, Ovalle MV³, Cortés JA^{2,3}, Alvarez CA^{2,3}.

¹Universidad de la Sabana, Colombia. ²Faculta de Medicina, Universidad Nacional de Colombia. ³Grupo para el Control de Resistencia Bacteriana de Bogotá (GREBO)*.

BACKGROUND

Candidemia is the most common fungal infection and considerable source of morbidity and mortality in critically ill and hospitalized patients.¹ *Candida albicans* was the most common cause of candidemia worldwide.² In Colombia between 2001 and 2007 *C. albicans* represented 50% of all mycotic bloodstream isolates.³ However a shift toward non-*albicans* candida species has been reported in other countries.^{5,6}

MATERIALS AND METHODS

Data from 39 tertiary care hospitals in Colombia were collected from a microbiology surveillance network using Whonet 5.6 database registries from 2008 to 2014. Incidence of candidemia over time was reported. Frequencies of bloodstream isolates were described according to location of adult and pediatric patients (Intensive Care Units –ICU- and non-ICU services). Only the first positive blood culture isolate for each patient was used.

*Participating hospitals and institutions (GREBO surveillance network):

Centro Policlínico del Olaya Clínica de Occidente Clínica Jorge Piñeros Corpas, Saludcoop Clínica Infantil Colsubsidio Clínica Juan N. Corpas Hospital Santa Clara Hospital San Ignacio Hospital Universitario Mayor Hospital Simón Bolívar Clínica Colsubsidio Orquídea Fundación Cardio infantil Fundación Hospital San Carlos Fundación Santafé de Bogotá Fundación Abood Shaio Instituto Nacional de Cancerología Hospital Central de la Policía Hospital de Kennedy, Hospital Fundación La Misericordia Hospital El Tunal Hospital Militar Central Hospital Universitario Clínica San Rafael Hospital Universitario La Samaritana Clínica Palermo Clínica Cafam Clínica El Bosque Clínica Candelaria IPS Clínica Miocardio sede Norte Clínica Miocardio sede Sur, Hospital Federico Lleras Acosta Manizales: Clínica la Presentación de Manizales Clínica Versalles, Hospital Departamental Hernando Moncaleano Perdomo E.S.E, Hospital Rosario Pumarejo de López Clínica Laura Daniela, Hospital Departamental de Villavicencio, Hospital San Rafael de Facativita Hospital San Rafael de Girardot

RESULTS

A total of 2994 bloodstream isolates due to candida infection were analyzed. In all groups the most frequent isolated organisms were *C. albicans*, *C. parapsilosis*, *C. tropicalis*, *C. glabrata* and *C. famata*. During the seven-year period of study, *Candida non-albicans* represented 56% of the adult ICU isolates, 54% of adults Non-ICU, 66% of pediatric and neonatal ICU and 62% of pediatric and neonatal non-ICU. Increase of non-*albicans* species of *Candida* was seen across 2008 to 2014 period been the most frequent mycotic bloodstream isolates in all four groups. However the main change in this trend was observed in adults ICU (48% in 2008 to 61% in 2014).

CONCLUSIONS

In Colombia there is a change in trends of candidemia from previous data.³ We found an increasingly role of non-*albicans* species of *Candida* in all groups studied. This finding has a clinical and epidemiological impact as these species show diminished susceptibility to common antifungals and represents a challenge for diagnostic and therapeutic approach.

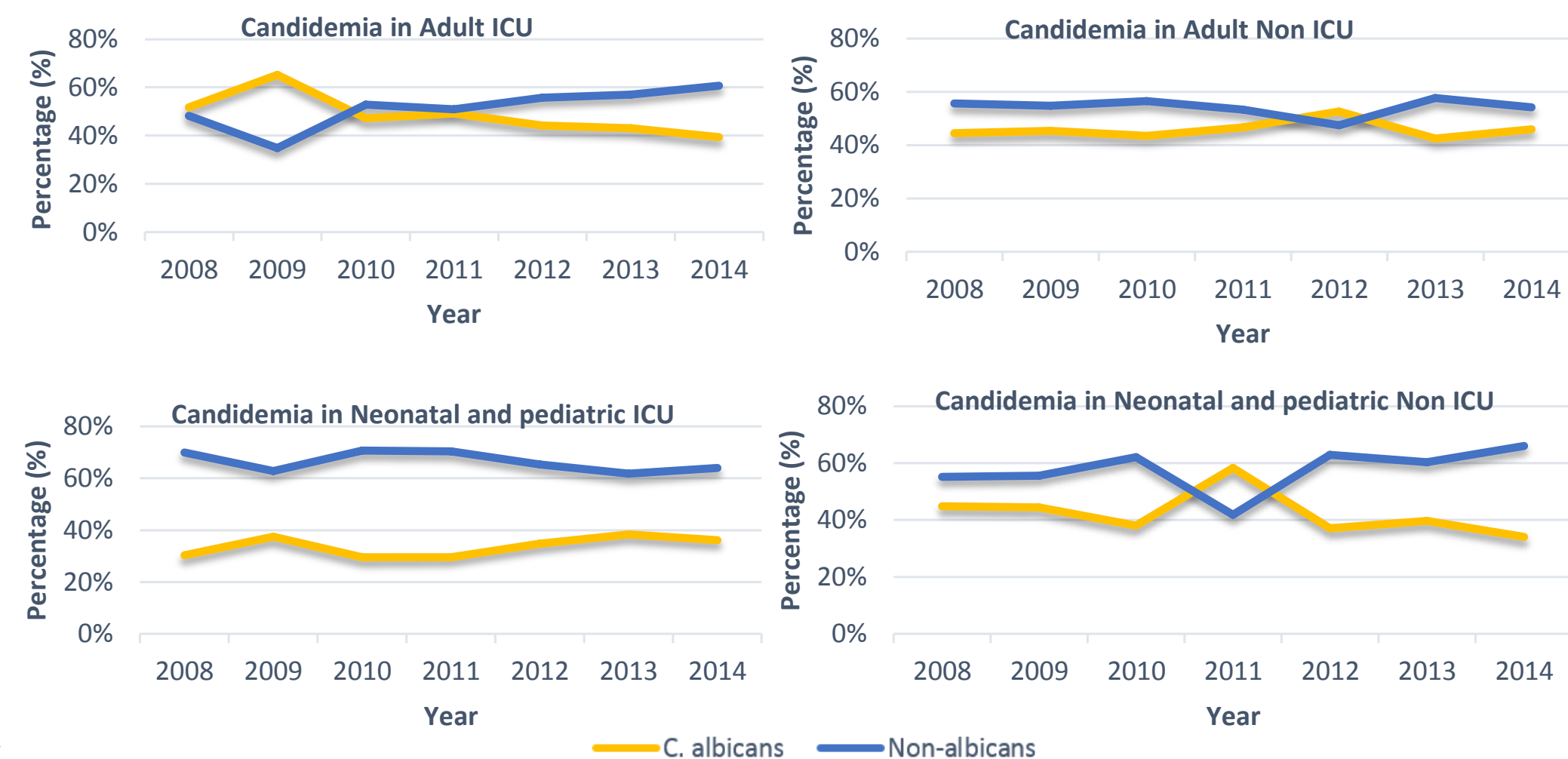
REFERENCES

- Delaloye, J., & Calandra, T. (2014). Invasive candidiasis as a cause of sepsis in the critically ill patient. *Virulence*, 5(1), 161–169. doi:10.4161/viru.26187
- Guinea, J. (2016). Global trends in the distribution of *Candida* species causing candidemia. *Clin Microbiol Infect*, 20 (6):5-10. doi: 10.1111/1469-0691.12539.
- Cortés, J.A., Reyes, P., Gómez, C., Buitrago, G., Leal, A.L. (2011). Fungal bloodstream infections in tertiary care hospitals in Colombia. *Rev Iberoam Micol*. 28(2):74-78. doi:10.1016/j.riam.2010.12.002
- Pfaller, M., Neofytos, D., Diekema, D., Azie, N., Meier-Kriesche, H., Horn, D. (2012) Epidemiology and outcomes of candidemia in 3648 patients: data from the Prospective Antifungal Therapy (PATH Alliance®) registry, 2004–2008. *Diagnostic Microbiology and Infectious Disease*, (74) 323–331.
- Deorukhkar, S., Saini, S., Mathew, S. (2014) Non-*albicans* *Candida* Infection: An Emerging Threat. *Interdisciplinary Perspectives on Infectious Diseases*, (2014) 1-7 pages. doi:10.1155/2014/61595.
- Sampaio, T., Rodrigues A., Vallone, C., Santos, M.F., Valle, M., Aranha, L.F., Correa. L. (2010) *Am J Infect Control*, (38) 546-551. doi:10.1016/j.ajic.2009.12.012

Table 1. Frequency of Candidemia by type of ward between 2008 to 2014 in Colombian tertiary care hospitals.

Microorganism	Adult ICU		Adult Non ICU		Neonatal and Pediatric ICU		Neonatal and Pediatric Non-ICU	
	n	%	n	%	n	%	n	%
<i>Candida albicans</i>	528	43,96	389	46,09	197	34,20	132	35,39
<i>Candida parapsilosis</i>	281	23,40	175	20,73	173	30,03	129	34,58
<i>Candida tropicalis</i>	181	15,07	144	17,06	57	9,90	41	10,99
<i>Candida glabrata</i>	73	6,08	56	6,64	7	1,22	6	1,61
<i>Candida faamata</i>	26	2,16	9	1,07	26	4,51	13	3,49
<i>Candida krusei</i>	24	2,00	21	2,49	8	1,39	5	1,34
<i>Candida guilliermondii</i>	23	1,92	10	1,18	22	3,82	9	2,41
<i>Candida sp.</i>	20	1,67	7	0,83	41	7,12	14	3,75
<i>Candida lusitaniae</i>	7	0,58	9	1,07	23	3,99	14	3,75
Other species	38	3,16	24	2,84	22	3,82	10	2,68
Total	1201	100	844	100	576	100	373	100

Figure 1. Trends in bloodstream isolates of *Candida albicans* and non-*albicans* *Candida* species from 2008 to 2014.



— C. albicans — Non-albicans