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Impact of *Candida* species colonization and azoles resistance in a neonatal intensive care unit

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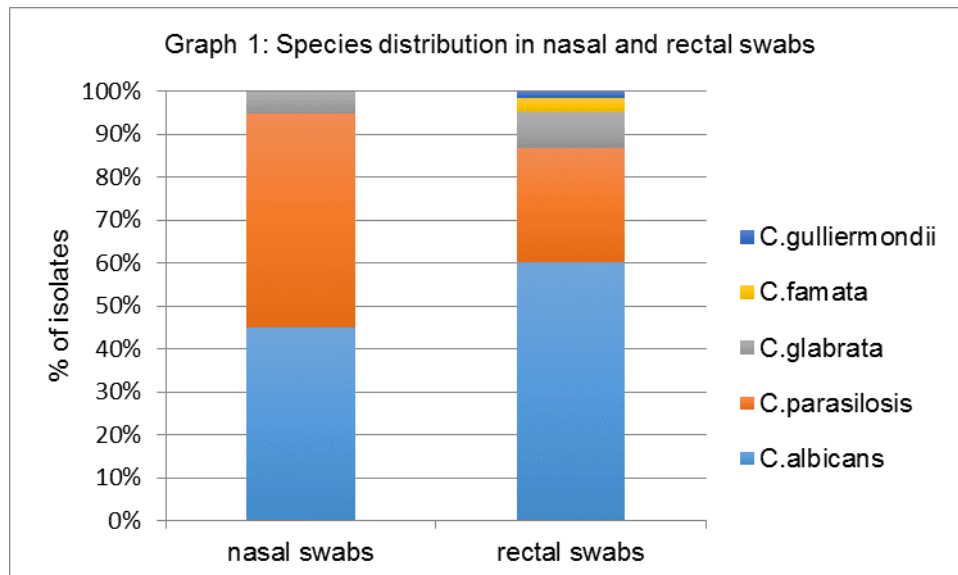
Background: *Candida* species are among the top 10 most frequently isolated nosocomial bloodstream pathogens in Europe. In particular, in neonatal intensive care units (NICUs) *Candida* infections are an emerging concern because of the increasing incidence, the related high morbidity and mortality rates reported. Moreover, the epidemiology of *Candida* infection rapidly changed in these years leading to the selection of less sensitive strains and species. Surveillance studies are mandatory to identify the local distribution of species, their antifungal susceptibility profiles and the emergence of resistance strains.

Material/methods: From December 2012 we performed a cohort prospective surveillance study in our NICU, collecting weekly nasal and rectal swabs. Swabs were placed on Sabouraud agar. *Candida* growth on agar plates was confirmed by microscopic observation. Furthermore, *Candida* spp. was identified through *Candida* chromogenic agar (ChromAgar *Candida*, Laboratorios Conda) and API® 20C AUX (Biomérieux). The first isolated non-*C.albicans* *Candida* (NCAC) species from colonized patients were tested with the main antifungal agents (YeastOne® Y010 Thermo Fisher Scientific) and the obtained MIC values were read according to CLSI.

Results: From December 2012 to June 2016 we enrolled 874 neonates and analyzed respectively 20/2014 (0,99%) of nasal swabs and 128/2014 (6,35%) of rectal swabs tested positive for *Candida* spp. The species distribution is showed in the Graph 1. 89/874 (10,18%) neonates tested positive at least in one swab. 59 isolates of NCAC species were tested with the main antifungal agents. All the tested strains were susceptible to echinocandins and amphotericin B. The susceptibility patterns for azoles are shown in the Table 1.

Conclusions: Our study confirm the rule of surveillance in the prevention and control of *Candida* spp. healthcare related infections especially in an high risk ward such as NICU. In particular, in our NICU

fluconazole prophylaxis is administered according to standard protocols from 2009. Antifungal susceptibility tests allowed to identify resistant and mutant strains whom acquired resistance so to obtain both clinical and epidemiological data promptly.



Candida (C.) species	PZ	VOR	IZ	FZ	N° isolates
<i>C. famata</i>	n.i.	S	S	S	3/3
<i>C. glabrata</i>	n.i.	S	DDS	DDS	5/11
	n.i.	S	S	DDS	1/11
	n.i.	S	R	DDS	4/11
	n.i./non WT	R/non WT	R/non WT	R/non WT	1/11
<i>C. guilliermondii</i>	n.i.	S	S	S	1/4
	n.i.	S	DDS	DDS	1/4
	n.i.	DDS	R	R	1/4
	n.i.	R	R	R	1/4
<i>C. parasilosis</i>	n.i.	S	S	S	30/41
	n.i.	S	S	DDS/non WT	6/41
	n.i.	S	S	R/non WT	2/41

	n.i./non WT	DDS/non WT	DDS/non WT	R/non WT	1/41
	n.i./non WT	R/non WT	R/non WT	R/non WT	2/41

PZ=posaconazole, VOR=voriconazole, IZ=itraconazole, FZ= fluconazole, N.I.= no interpretation available, S= susceptible, DDS= dose dependent susceptible, R= resistant, no WT=no wild type