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Paper Poster Session
Fungemia

Genotyping demonstrated a reduction in the nosocomial transmission of Candida albicans and Candida parapsilosis after a campaign to control catheter-related infection

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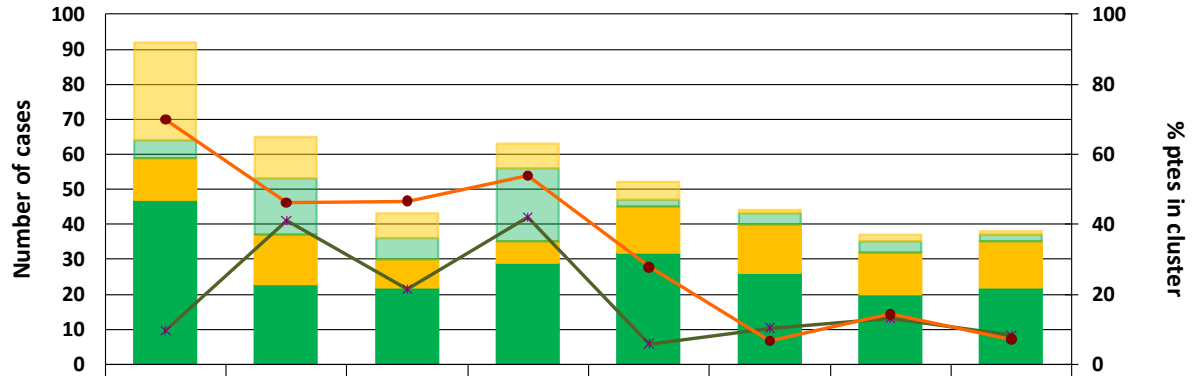
Background: We previously reported that a high percentage of cases of candidemia were caused by clusters of *Candida albicans* and *Candida parapsilosis*. This finding suggests that transmission of the microorganisms is nosocomial. In January 2011, we implemented an antifungal stewardship program and a campaign to reduce catheter-related infections in the hospital. We subsequently observed a decrease in the number of candidemia episodes caused by *C. albicans* and *C. parapsilosis*. We analyzed whether this reduction was accompanied by a decrease in the percentage of patients involved in clusters.

Material/methods: We studied 434 patients admitted to Gregorio Marañón Hospital (Madrid, Spain) with candidemia caused by *C. albicans* (n=279) or *C. parapsilosis* (n=155) between January 2007 and December 2014. The incident isolates were identified using molecular methods and further genotyped using species-specific highly polymorphic microsatellite markers. Isolates were considered to be identical genotypes when they showed the same alleles for all loci. A cluster was defined as group of ≥2 patients infected by an identical genotype. The study period was divided into 2 periods (pre-campaign, 2007-2010; and post-campaign, 2011-2014), which we compared.

Results: We found 243 *C. albicans* genotypes and 108 *C. parapsilosis* genotypes. Twelve percent (28/351) were in clusters. We did not find statistically significant differences in the percentage of clusters of *C. albicans* (n=22, 9%) or *C. parapsilosis* (n=16, 15%) (*P*=0.15). Of the 434 patients, 121 (28%) were involved in clusters; however, the percentage of patients in clusters infected by *C. albicans* (n=58/279, 21%) was significantly lower than that of patients in clusters infected by *C. parapsilosis* (n=63/155, 40%) (*P*<0.001). The number of patients involved in each cluster ranged from 2 to 6 (*C. albicans*) and from 2 to 14 (*C. parapsilosis*). The number of patients with candidemia per year ranged from 37 to 92, with the highest number detected in 2007. The number of patients in clusters per year ranged from 2 to 21 (*C. albicans*) and from 1 to 28 (*C. parapsilosis*), with the highest

number found in 2007. The number of episodes detected in the pre-campaign period was higher than in the post-campaign period (n=263 vs. n=171). Furthermore, the percentage of episodes caused by clusters was significantly higher in the pre-campaign period (39%) than in the post-campaign period (11%) (*P*<0.001). Linear regression analysis showed a positive correlation between the overall number of candidemia cases and the cases caused by clusters (r^2=0.89).

Conclusions: We found that the reduction in the percentage of episodes of candidemia caused by *C. albicans* and *C. parapsilosis* was accompanied by a decrease in the percentage of episodes caused by clusters. Our observations suggest that implementation of a campaign to reduce the number of catheter-related infections leads to better control of nosocomial candidemia.



	2007	2008	2009	2010	2011	2012	2013	2014
C. parapsilosis ptes clusters	28	12	7	7	5	1	2	1
C. albicans ptes clusters	5	16	6	21	2	3	3	2
C. parapsilosis singletone	12	14	8	6	13	14	12	13
C. albicans singletone	47	23	22	29	32	26	20	22
% ptes in clusters of C. albicans	10	41	21	42	6	10	13	8
% ptes in clusters of C. parapsilosis	70	46	47	54	28	7	14	7

Figure.