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P1201 Assessment of the anti-biofilm effect of micafungin against a rat model of catheter related-candidaemia

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Background: In patients with catheter-related candidemia (CRC), with impossible catheter withdrawal, systemic antifungal treatment and antifungal lock therapy, with highly active anti-biofilm (HAAB) agents, can be a therapeutic alternative. In vivo animal models of this situation are scarce. We assessed the efficacy of a 7-day regimen of micafungin lock to treat rats with CRC caused by a bioluminescent *Candida albicans* SKCA23-ACTgLuc strain, using bioluminescence (BL) assays.

Materials/methods: We used 33 female Wistar rats –250 g each– divided in the following groups: sham (A), infected non-treated (B), treated with lock therapy only (0.16 mg/ml) (C), treated with systemic antifungal only (1 mg/kg) (D), and treated both systemically and with lock solution at the same doses of groups C and D (E). Catheters were infected with the bioluminescent *Candida* 24h before insertion in the femoral vein (day 0). Antifungal treatment went from day+1 to day+7 followed by 7 days of surveillance without any treatment in those animals that were alive at the end of the study. BL assays were carried out on days 1, 3, 5, and 14; clinical variables were checked daily and post-mortem microbiological cultures of the catheter and several tissues were also obtained.

Results: Overall, 84.8% (28/33) rats completed the study. No animals in group B were alive after day 7 (fig A). Group A animals showed significant weight loss at day 2, 4, and 5 compared with groups C and D ($P<0.05$) (fig B), 75% (3/4) had CRC, and BL increased up to day 3 and remained constant (fig

C). Catheter positive cultures rates in groups C, D, and E were, respectively: 83.3%, 62.5%, and 25.0% (p=0.15).

Conclusions: Our data suggests that combining systemic micafungin with micafungin lock therapy was the best regimen to reduce *C. albicans* biofilm in the catheter lumen and to eradicate candidemia in an animal model. However, as BL was still detectable in the catheter even when candidemia and cultures were negative, we consider that further studies are needed to evaluate the presence of viable but non-culturable cells.

Figure. Animal clinical progression
(A) Survival plot of group B and C. (B) Mean weight loss of every group along time. (C) BL signal along time as percentage of day 1