OC18 & P08 - **Antibiotic treatment induces recruitment and inflammatory activation of colonic iNKT cells**

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Background: The gut mucosa is continuously exposed to a vast community of microorganisms, collectively defined as microbiota, establishing a mutualistic relationship with the host and contributing to shape the immune system. Gut microbiota is acquired at birth, and its composition is relatively stable during the entire adult life. Intestinal dysbiosis, defined as a microbial imbalance of gut bacterial communities, can be caused by several factors, including bacterial infections and antibiotic use, and has been associated with an increased risk to develop or exacerbate immune-mediated pathologies, such as allergic reactions, asthma, and inflammatory bowel diseases. Still, the mechanisms by which antibiotic-induced gut dysbiosis may lead to development of mucosal inflammation are still matter of debate.

Objective To this end, we aimed to evaluate the impact of antibiotic treatment on phenotype and functions of intestinal immune cell populations, including invariant natural killer T (iNKT) cells, a subset of lipid-specific T cells profoundly influenced by alterations on the commensal microbiota.

Methodology To this aim, a cocktail of broad-spectrum antibiotics was administered for 2 weeks to otherwise healthy mice before re-colonization of the intestinal microbial community with oral gavage of eubiotic or dysbiotic mucosa-associated bacteria and luminal colonic content, followed or not by intestinal inflammation induction.

Results: Here, we showed that short-term antibiotic treatment alters frequency and functions of intestinal iNKT cells, even in the absence of intestinal inflammation. The presence of a dysbiotic microbiota after antibiotic treatment imprints colonic iNKT and $CD4_+$ T cells toward a pro-inflammatory phenotype that collectively contributes to aggravate intestinal inflammation. Nonetheless, the inflammatory potential of the dysbiotic microbiota decreases over time opening the possibility to temporally intervene on the microbial composition to re-equilibrate dysbiosis, thus controlling concomitantly mucosal immune T cell activations.

Conclusions / Implications for practice: Albeit antibiotic treatment cannot often be avoided, it should be kept in mind to predispose, especially for those individuals, treatments to re-equilibrate antibiotic-induced dysbiosis. For example, probiotics administration could contribute to contrast pathobionts engraftment and simultaneously switching-off mucosal immune cell activations.