Medical Xpress

Study offers promise for preventing necrotizing enterocolitis in preemies

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Researchers at Stanley Manne Children's Research Institute at Ann & Robert H. Lurie Children's Hospital of Chicago, and colleagues, discovered a promising direction toward understanding the development of necrotizing enterocolitis (NEC), a devastating intestinal disease commonly affecting premature infants, in order to treat it. Studying the early cellular events leading to NEC in a mouse model, they found that activation of a key protein (transcription factor NF-κB), which responds to stimuli like bacterial products, triggers inflammation in the intestine prior to the presence of intestinal injury. Blocking NF-κB activity prevented recruitment of bone marrow-derived monocytes (a type of white blood cells) into the intestine and their subsequent differentiation into macrophages (immune cells involved in the inflammatory response but also tissue damage when unregulated). This process decreased the development of NEC. Their findings were published in the *American Journal of Pathology*.

"Our study points to a new potential strategy for preventing NEC during the first few weeks of life in premature babies who are at high risk for the disease," says senior author Isabelle G. De Plaen, MD, neonatologist and researcher at Manne Research Institute at Lurie Children's, who also is an Associate Professor of Pediatrics at Northwestern University Feinberg School of Medicine. "If we could intervene early to prevent excessive inflammation caused by monocyte recruitment before signs of NEC are found, we could substantially improve outcomes for these babies."

Inflammation is involved in NEC and the damaged intestinal tissues often need to be surgically removed. The resulting short gut is not always sufficient to sustain survival. Damaged intestinal tissue also allows bacteria normally confined inside the intestinal cavity to leak into the abdomen and cause infection. This process can be overwhelming to a baby and possibly fatal. Because the exact causes of NEC are unclear, no specific treatment is currently available and prevention remains a challenge.

"By investigating the earliest inflammatory events in NEC, we come much closer to developing the means to interrupt mechanisms that contribute to this disease," says Dr. De Plaen.

More information: Elizabeth Managlia et al, Blocking NF-κB Activation in Ly6c+ Monocytes Attenuates Necrotizing Enterocolitis, *The American Journal of Pathology* (2018). DOI: 10.1016/j.ajpath.2018.11.015

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