CHRONIC STRESS ACCELERATED COLORECTAL CANCER PROGRESSION BY DISTURBING THE BALANCE OF GUT MICROBIOTA

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Chronic stress accelerates colorectal cancer progression in mice by depleting intestinal Lactobacillus species, which weakens CD8+ T cell anti-tumor immunity.

KEY POINTS

- Chronic stress significantly accelerated CRC progression in both subcutaneous MC38 and AOM/DSS-induced murine models (all $P < 0.05$), while antibiotic administration attenuated this effect ($P = 0.9897$).
- Mice receiving fecal microbiota transplantation from chronically stressed mice exhibited higher tumor burden compared to controls ($P < 0.01$), indicating gut microbiota involvement in stress-induced CRC progression.
- Chronic stress caused significant depletion of Lactobacillus johnsonii, Lactobacillus gasseri, and Lactobacillus plantarum, all inversely correlated with tumor numbers in AOM/DSS models (all $P < 0.05$).
- Chronically stressed mice had fewer CD8+ T cells and IFN-γ+ CD8+ T cells in colon tumors compared to controls, but this difference was eliminated after antibiotic administration.
- The three depleted Lactobacillus species were positively associated with CD8+ T cells in tumors (all $P < 0.05$), suggesting that stress-induced Lactobacillus depletion dampens CD8+ T cell anti-tumor immunity.

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