Beta-adrenergic receptor signaling affects tumor microenvironment

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(HealthDay)—?$_2$-adrenergic receptor (?-AR) signaling in host immune cells regulates CD8$^+$ T-cell frequency and functional orientation within the tumor microenvironment, according to a study published online Aug. 17 in *Cancer Research*.

Mark J. Bucsek, from Roswell Park Cancer Institute in Buffalo, N.Y., and colleagues used physiologic, pharmacologic, and genetic strategies to reduce adrenergic stress signaling in two preclinical mouse tumor models.

The researchers found that reducing ?-AR signaling facilitated conversion of tumors to an immunologically active tumor microenvironment. In addition to an elevated effector CD8$^+$ T-cell to CD4$^+$ regulatory T-cell ratio, there was increased intra-tumoral frequency of CD8+ T-cells with an effector phenotype and decreased expression of PD-1. The conversion significantly increased the efficacy of anti-PD-1-chekpoint blockade.

"These data highlight the potential of adrenergic stress and norepinephrine-driven ?-adrenergic receptor signaling to regulate the immune status of the tumor microenvironment and supports the strategic use of clinically available ?-blockers in patients to improve responses to immunotherapy," the authors write.

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