Suppressor cell-targeted immunotherapy with denileukin diftitox improves tuberculosis treatment

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Current therapies for tuberculosis (TB) are problematic due to emerging drug resistance, toxicity, and the need for prolonged treatment. Host-directed therapies that augment host immune effector mechanisms may serve as important adjunctive therapies for tuberculosis treatment. Regulatory T cells and myeloid derived suppressor cells are important populations of cells that are induced during TB infection and can suppress the effector T cell response. We evaluated a recombinant fusion protein toxin, denileukin difititox (DD), as a host-directed immunotherapy in an acute mouse model of TB infection and analyzed the cellular composition and bacterial burden in lungs and spleens. The *in vivo* studies in Balb/c mice indicate that DD administration results in reduced bacterial proliferation during lung infection and augments the effect of standard TB drugs in the mouse model. This beneficial effect is likely due to its activity in depleting regulatory T cells and other cells that express high levels of CD25 during TB infection. Our results indicate that denileukin diftitox and other suppressor cell–depleting therapies may be useful adjunctive, host-directed therapies for TB.

Speaker Biography

Shashank Gupta is currently working in Brown University, USA and he has previously worked on tuberculosis in Johns Hopkins Medicine.

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