Expression of elastase on polymorphonuclear neutrophils in vitro and in vivo: identification of CD11b as ligand for the surface-bound elastase.

Abstract:
Elastase is a major serine protease of polymorphonuclear neutrophils (PMN). On activation of PMN, the preformed protein is mobilized from intracellular stores and, depending on the activating conditions, is either released into the supernatant or is bound to the cell surface. By a variety of methods, including uptake and crosslink studies, as well as confocal laser scan microscopy, we now provide evidence that elastase binds to the beta(2)-integrin CD11b and induces a conformational alteration of CD11b, apparent as expression of a neodeterminant. Similarly to the in vitro data, elastase surface expression and conformational alterations of CD11b were seen on PMN of patients with Staphylococcus aureus-induced localized infection, particularly on PMNs recovered from the infected site. The presence of elastase at the site of inflammation is in keeping with its presumed role in leukocyte trafficking and host defense. On the other hand, because of its potential for degrading extracellular matrix proteins, elastase could participate in localized tissue damage as it occurs in severe S. aureus infection.