Diagnostic value of mast cell mediators in anaphylaxis

Abstract:

Anaphylaxis results when mast cells and basophils are activated to release mediators. In these reactions, histamine and metabolites of histamine can be detected in the plasma and/or urine. However, the value of histamine as a marker substance for anaphylaxis is hampered by the fact that it is rapidly degraded and that the concentration of histamine metabolites in the urine also depend on other factors, such as the intake of histamine-rich foods. The serine protease tryptase is the gene product of two genes, which are rather specifically expressed in mast cells: the alpha-protryptase gene and the beta-tryptase gene. A formerly available immunoassay was directed against beta-tryptase, the form of the enzyme that is released during anaphylaxis. The currently available commercial tryptase assay measures total tryptase and only an increase in comparison to basal concentrations may be used to confirm an anaphylaxis. Permanently elevated tryptase concentrations are a sign for systemic mastocytosis. Elevated serum tryptase concentrations were found in the majority of anaphylactic reactions to insect venoms, drugs and foods. There is a trend towards higher values in more severe reactions. In fatal anaphylaxis, only extensively increased serum tryptase values can confirm the diagnosis. There are reports of increased values of prostaglandin D2 and IL-6 after anaphylactic reactions, however, the value of these and other lipid mediators and cytokines in the diagnosis of anaphylaxis remains...
unclear. The demonstration of elevated concentrations of the mast cell mediators histamine and tryptase helps to confirm a suspected anaphylaxis and increases our understanding of the mechanism of those reactions.