Florida Poison Information Center/Jacksonville
At Shands Jacksonville
University of Florida Health Science Center
1-800-222-1222

Staphylococcal Enterotoxin B

Mechanism of Action

Staphylococcal Enterotoxin B (SEB) is a heat-stable pyrogenic toxins derived from Staphylococcus aureus which causes food poisoning. It can be processed and delivered as an inhalational agent for biologic warfare. In this form it has an extremely high toxicity. Inhaled in very low doses it can render a high percentage of personnel clinically ill and can effect large numbers of people miles downwind from release.

Properties

Exotoxins such as SEB are extremely potent activators of T cells. Production of various cytokines is stimulated by exposure. Their release mediates the toxic effects of SEB.

Symptoms

Exposure to SEB causes symptoms within 3-12 hours. Sudden onset of fever, chills, headache, myalgias, dyspnia and non-productive cough occur after exposure. The fever may last 2-5 days, and the cough may last for up to 4 weeks. Nausea, vomiting, and diarrhea may also be seen secondary to inadvertent swallowing of toxin. Unusual cases of pulmonary edema have been reported. Exposure should be suspected if a large number of patients with these symptoms are seen within a 24-hour period. SEB toxicity is self-limited with recovery expected. Recovery occurs over a 1-2 week period. Intoxication with SEB rapidly progresses to a stable clinical state. Other pulmonary biological warfare agents may produce similar symptoms but progress if left untreated.

Medical Management

Decontamination should be conducted with 0.5% hypochlorite and/or soap and water. Medical personnel should use a protective mask. Any food that may have been contaminated should be destroyed.

Treatment: Supportive care with oxygen and fluids is indicated. Severe cases may cause pulmonary edema. Laboratory findings are nonspecific. An elevated neutrophilic leukocytosis and erythrocyte sedimentation rate is seen within 12-24 hours. SEB toxin can be found in urine and nasal secretions for up to 24 hours. Urine and nasal swabs should be obtained as soon as exposure is suspected. Antibodies to SEB may be detected in serum. Acute and convalescent serum samples may aid in making the diagnosis.

Bibliography

1. Franz VC, et al *Clinical Recognition and Management of Patient exposed to Biological Warfare Agents* JAMA; 278: 399-411

Medical Management of Biological Casualties. United States Army. 1998.

Call the Florida Poison Information Center Network for information and/or to report exposures.

1-800-222-1222
Florida Poison Information Center Network
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