Eosinophilia–myalgia syndrome

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Eosinophilia–myalgia syndrome (EMS) is an incurable and sometimes fatal flu-like neurological condition that is believed to have been caused by ingestion of poorly produced L-tryptophan supplements.[1][2] Similar to regular eosinophilia, it causes an increase in eosinophil granulocytes in the patient's blood.[3][4]

Eosinophilia-myalgia syndrome	
Classification and external resources	
ICD-10	M35.8
ICD-9	710.5
DiseasesDB	32044
eMedicine	derm/891
MeSH	D016603

Contents [hide]

History [edit]

See also tryptophan and EMS.

Eosinophilia–myalgia syndrome was first recognized after the doctors of 3 American women with mysterious symptoms talked together in 1989. However, many people became ill as long as 2–3 years before the illness was reported to the Centers for Disease Control and Prevention in November 1989. Rheumatologists experienced a large surge of new patients with mysterious symptoms during this period. It is possible that as many as 60,000 individuals became ill from using L-tryptophan. Additionally, when first marketed, 27 people died.

Some epidemiologist studies[5][6][7] traced the cause to consumption of L-tryptophan from a single Japanese manufacturer, Showa Denko.[8] The company supplied the majority of L-tryptophan to the United States under various brand names. There was evidence that new batches of L-tryptophan may have been improperly prepared. First, the specific bacterial culture used to synthesise this tryptophan had recently been genetically engineered to greatly increase tryptophan production. The increased concentrations of tryptophan in the fermentor may in turn have led to increased production of trace impurities. It is also likely that contaminants were increased because the L-Tryptophan producing bacteria were being grown in an open vat in a fertilizer factory. Second, shortcuts had

been taken in the purification process to reduce costs. For example, a purification step that used charcoal adsorption to remove impurities had been modified to reduce the amount of charcoal used. It is possible that one or more of these modifications and/or the environment for manufacture allowed new or greater impurities through the purification system. More than 60 different impurities were identified in the L-tryptophan lots which had been associated with cases of EMS.

The specific impurity (or impurities) responsible for the toxic effects was never firmly established, however two compounds, EBT (1,1'-ethylidene-bis-L-tryptophan) and MTCA (1-methyl-1,2,3,4-tetrahydro-beta-carboline-3-carboxylic acid), which are close chemical relatives of L-tryptophan were implicated.[9][10][11][12]

Regardless of the origin of the toxicity, L-tryptophan was banned from sale in the US in 1991; and other countries followed suit. In February 2001, the FDA loosened the restrictions on the marketing of tryptophan (though not on importation). The supplement 5-HTP (a hydroxylated form of tryptophan and a precursor to serotonin) remains widely available.

Alternative theory [edit]

An alternative explanation for tryptophan associated EMS has recently been proposed.[13] Consumption of large doses of tryptophan leads to production of metabolites, some of which may interfere with normal histamine degradation. Furthermore, excessive histamine activity has been linked with blood eosinophilia and myalgia.

See also [edit]

- Toxic oil syndrome
- Cattle Health Initiative (British)

References [edit]

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External links [edit]

- National Eosinophilia Myalgia Syndrome Network
- Eosinophilia-Myalgia Syndrome: Information & Support

v • d • e	Systemic CT disorders (M32–M36, 710) [hide]		
General	Systemic lupus erythematosus: Drug-induced SLE · Libman-Sacks endocarditis Inflammatory myopathy/Myositis: Dermatopolymyositis (Dermatomyositis/Juvenile dermatomyositis, Polymyositis) · Inclusion body myositis Scleroderma: Systemic scleroderma (Progressive systemic sclerosis, CREST syndrome) Overlap syndrome / Mixed connective tissue disease		
Other hypersensitivity/autoimmune	Sjögren's syndrome		
Other	Behçet's disease · Polymyalgia rheumatica · Eosinophilic fasciitis · Eosinophilia–myalgia syndrome · fibrillin (Marfan syndrome, Congenital contractural arachnodactyly)		
M: MUS, DF+DRCT	anat (h/n, u, t/d, a/p, l)/phys/hist	noco(m, s, c)/cong(d)/tumr, sysi/epon, injr	proc, drug (M1A/3)

Categories: Systemic connective tissue disorders | Connective tissue diseases