

Immunohistochemical morphologic survey of eosinophil necrotic granulomas in gut and liver
of Acute Schistosomiasis (Katayama disease).
The importance of necrosis for eosinophils in vivo.

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Abstract

Egg granulomas - observed in different organs depending to the schistosoma species - are a feature of an immunologic caused local inflammatory reaction to parasite egg antigens in schistosomiasis. Size and structure of granulomas varies to host immuno-compentence and stage of infection. Cell rich inflammatory periovular granulomas caused by hyperreactivity to egg antigens are mainly seen in non-immune, first time, but severely infected travellers to countries where schistosomiasis is endemic. Sick persons sometimes show typical symptoms of katayama disease as a clinical manifestation of acute schistosomiasis. The study was designed to determine interaction of the cellular and non-cellular components in acute eosinophil hyperergic granulomas reflecting acute schistosomiasis and to examine the antiparasitic function of granuloma eosinophils. Chosen from 465 cases of confirmed Schistosomiasis mansoni or S. japonicum on histological grounds, fit to our defined criteria, 16 paraffined tissue samples of liver and gut, taken for diagnostic reasons, were immunohistochemically stained and microscopically examined. Staining with monoclonal and polyclonal antibodies against eosinophil cationic protein clone 2 (ECP-EG2), major basic protein (MBP), lymphocytes (CD4), macrophages (CD68), dendritic cells (P55), immunoglobulins (IgE, IgA, IgG) and complement (C1q, C3d) was performed. Within extended necrotic granulomas, degenerating eggs where encircled or infiltrated by masses of free granular extra cellular material. This material showed the same specific positive immunostaining for ECP-EG2 and MBP as the cytoplasm of intact eosinophils did. In rare cases a strong hypersensitive immunoreaction for egg antigens reveal a frequent necrosis of eosinophils in the immediate vicinity and at some distance from the schistosoma egg with subsequent release of granules and the deposition of toxic granule proteins onto the eggshell. Demonstrating the special function of eosinophils and its toxic granule compartments in the killing of schistosoma eggs in acute schistosomiasis. As a result, necrosis of granuloma eosinophils is considered to being the main pathomechanism of killing schistosoma eggs in acute schistosomiasis.