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Autoimmunity and Heavy Metals

Pierluigi E. Bigazzi View all authors and affiliations

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Abstract

This brief review is focused on those heavy metals (cadmium, gold and mercury) that have strong associations with autoimmunity. Cadmium treatment of rats and mice results in autoimmune responses that vary with species and inbred strain of animals. However, there is no solid evidence demonstrating that the renal pathology observed in humans exposed to cadmium has an autoimmune pathogenesis. More clear-cut are the autoimmune effects of preparations containing gold salts, that have been widely used in the treatment of rheumatoid arthritis. Gold may cause autoimmune thrombocytopenia, immune complex-mediated glomerulonephritis and other autoimmune disorders. Similarly, there is solid evidence that mercury can induce autoimmune disease both in humans and experimental animals. The lessons to be derived from metal-induced autoimmunity relate to structure-activity relationship, pathogenesis, etiology and genetics. They probably apply to xenobiotic-induced autoimmune disease in general.