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Autoantibodies in complex regional pain syndrome bind to a differentiation-dependent neuronal surface autoantigen.

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Abstract

Complex regional pain syndrome, which is characterised by pain and trophic disturbances, develops frequently after peripheral limb trauma. There is an increasing evidence of an involvement of the immune system in CRPS, and recently we showed that CRPS patients have autoantibodies against nervous system structures. Therefore we tested the sera of CRPS patients, neuropathy patients and healthy volunteers for surface-binding autoantibodies to primary cultures of autonomic neurons and differentiated neuroblastoma cell lines using flow cytometry. Thirteen of 30 CRPS patients, but none of 30 healthy controls and only one of the 20 neuropathy sera had specific surface binding to autonomic neurons ($p < 0.001$). The majority of the sera reacted with both sympathetic and myenteric plexus neurons. Interestingly, 6/30 CRPS sera showed binding to undifferentiated SH-SY5Y neuroblastoma cells. However, differentiation of SH-SY5Y into a cholinergic phenotype induced a surface antigen, which is recognised by 60% of CRPS sera (18/30), but not by controls ($p < 0.001$). Our data show that about 30-40% of CRPS patients have surface-binding autoantibodies against an inducible autonomic nervous system autoantigen. These data support an autoimmune hypothesis in CRPS patients. Further studies must elucidate origin and function of these autoantibodies in CRPS.

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Publication Types, MeSH Terms, Substances

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