Molecular Pathogenesis of Immune System Disorders

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Immune system is a highly organized and complex network of tissues, cells and molecules which safeguard the body. The major purpose of the immune system is to defend the body from any infection, foreign molecules or external injury. But if the very system meant to protect falls sick, how would the body respond? The system gets confused and goes haywire resulting in erratic and adverse symptoms. The immune system may become either over-reactive, under reactive or dysregulated. The molecular mechanisms of few of such diseases like Hyper IgE syndrome (genetic disorder), Lymphatic filariasis (parasitic infection) and Lambert–Eaton myasthenic syndrome (autoimmune disease) will be discussed in the talk. Breaching of self and non-self distinction due to genetic anomaly will result in hyper IgE syndrome characterized by susceptibility to bacterial infection and skin diseases. Similarly when parasitic multi-cellular worms selfishly down regulate immune response of the host to avoid long-term detection, there is again the component of induced anarchy in immune molecular mechanisms. Finally when immune system is auto reactive to neuro receptors there would be progressive loss of muscle weakness attributed to cross-reactive antibodies in the neuro-muscular junction. In conclusion, the talk would attempt to shed light on the existing molecular mechanisms to understand immune disease process for developing viable medical intervention for long-term disease management.