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Diseases due to accumulation of macromolecular proteins caused to the human body and their removal

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Our biology and organ systems are designed to remove toxins but in certain diseases and in aging there is an accumulation of macromolecular proteins and pathological molecules in abnormally high concentrations. It is believed also that misfolding of proteins naturally occur during the aging process as they are damaged and can cause diseases associated with aging, such as certain cancers, Alzheimer's and Parkinson's. In part protein accumulation results from impaired protein degradation. Over 100 diseases of varying types affecting our major organ systems are known to be associated with abnormal or high concentrations of macromolecular proteins and other chemistries. Various medical interventions, including pharmacological agents, have failed to adequately "clear" our bodies from these solutes and can be associated with serious side effects. New approaches are needed but simply put, can the removal alone of these pathological molecules be supportive of healthier lives? Investigations in various diseases with therapeutic apheresis as by plasma exchange and plasma treatment with membranes and sorbents have shown beneficial effects. In Alzheimer's patients in two clinical trials where plasma from young donors was administered (to test the hypothesis that young molecules are important) or replace plasma with albumin (to test the hypothesis that toxic molecules are present) the results have not been definitive to date. In the group of disease associated with cryoprecipitable proteins investigations have shown that these proteins are suppressive to the immunological system and that there removal, such as by cryofiltration, improves cellular functions as well as patient conditions. The apheresis procedure can serve as "artificial senescent cells", by removing abnormal and damaged proteins. By removing the "biological smoke", those abnormally high concentration and toxic macromolecules, the biological system can be activated to return to normalcy and allow pharmacological agents to work more effectively.

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