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Plasmapheresis

Detoxification, Immune Support, and Applications for Chronic Illness

Eric Gordon, MD

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What is Plasmapheresis?

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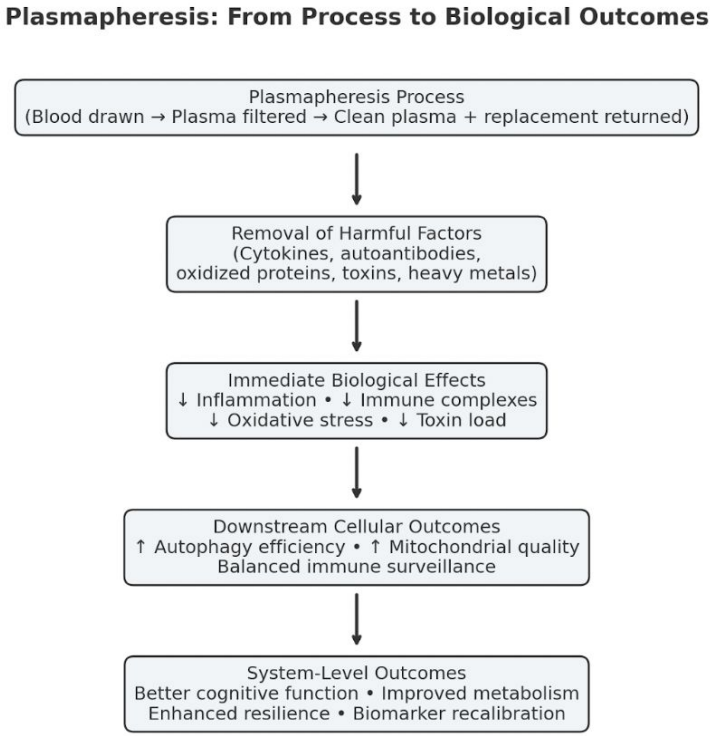

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Different Types of Apheresis Treatments

	Treatment Definition	Benefits
Plasmapheresis / Total Plasma Exchange	Filters the blood by separating plasma from red blood cells, filtered plasma is removed and replaced with fresh albumin	Removes circulating toxins, misfolded proteins, pathogenic antibodies; provides immune modulation and detox support
Inuspheresis	A double filtration method, first removes plasma, then passed through a second filter toxins, antibodies, and inflammatory chemicals	Removes heavy metals, cytokines, autoantibodies, pesticides, lipids
HELP Apheresis / Lipoprotein Apheresis (Heparin-induced Extracorporeal Low Density Lipoprotein Precipitation)	Heparin and acetate buffer is added to the plasma to precipitate harmful substances, then removed by a filter, followed by a heparin-adsorbing filter and a dialysis filter to restore blood pH and fluid balance before to the body	Lowers LDL cholesterol and lipoprotein(a); reduces cardiovascular risk and vascular inflammation

Different Types of Apheresis Treatments, cont.

	Treatment Definition	Benefits
Automated Red Blood Cell Exchange	Abnormal red blood cells filtered out and replaced with healthy red blood cells from a donor	Reduces complications of sickle cell disease and other hemoglobinopathies; improves oxygen delivery and circulation
Cellular Donation and Gene Therapies	Cells are introduced into the patient's body to compensate for a lack of certain cells or to replace diseased cells. Used in blood banks.	Restores healthy cell populations; supports immune reconstitution; enables advanced gene and cellular therapies
Double-Filtration Plasmapheresis	Used in plasma donation, also used in Europe and Japan for specific particle removal	Allows selective removal of pathogenic antibodies, immune complexes, and large molecules while preserving health plasma

Types of Plasmapheresis Machines

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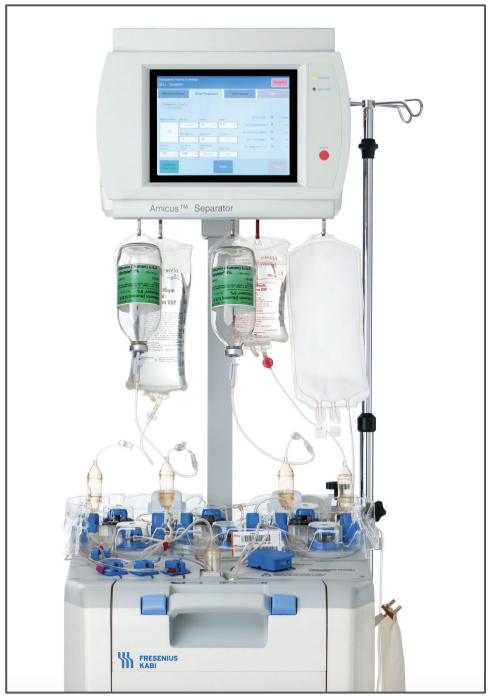

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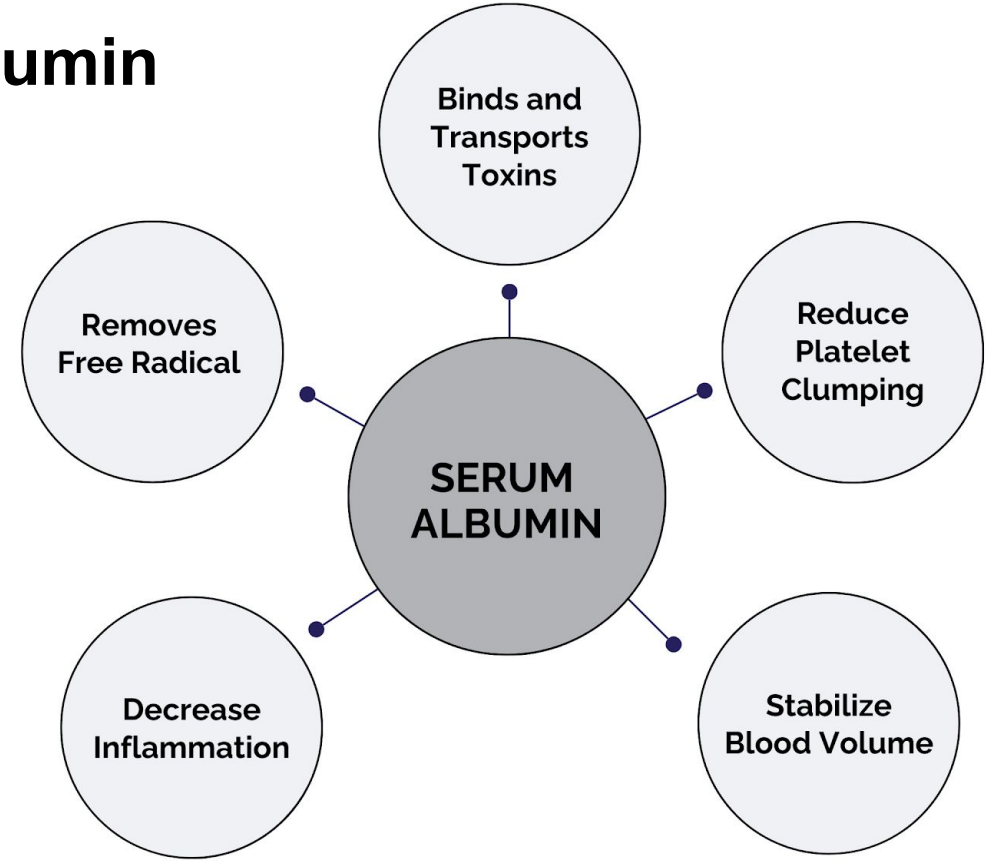
Vascular Access Options

- What is available and what works for appropriately accessing the patient
- Available methods: Peripheral veins, plastic vs. metal catheters (appropriate gauge)
- Why not PICC lines; alternatives like special ports or dialysis ports
- Ultrasound for basilic veins and cephalic veins
- Femoral vein access

Albumin Replacement

- **Albumin**
  - Albumin is the main protein in human blood plasma that helps maintain fluid balance and binds toxins, hormones, and other substances for transport.
  - Maintains blood volume, pressure, and osmotic balance
- **Key Benefits**
  - Provides a fresh supply of albumin to bind toxins (mycotoxins, heavy metals, PFAS, etc.)
  - Supports detoxification by mobilizing stored toxins for clearance
  - Safe, well-tolerated replacement fluid with decades of clinical use
  - Reduces risk compared to alternatives (e.g., saline or plasma substitutes)

Serum Albumin Overview



Albumin Safety

- Plasma: Albumin is derived from large pools of human plasma collected from approved and screened donors.
- Cold Ethanol Fractionation (Cohn-Oncley): Plasma proteins are separated using graded ethanol additions at low temperature, followed by precipitation steps designed to isolate human albumin from other plasma components.
- Ultra- and Diafiltration: Further purification and concentration of the separated albumin fraction are achieved by filtering out impurities and residual solvents.
- Pasteurization: The final albumin solution undergoes bulk and final container pasteurization at 60°C for 10–11 hours to inactivate both enveloped and non-enveloped viruses, providing robust pathogen safety.

How Gordon Medical Uses Plasmapheresis

- PANS / PANDAS
- Neuro Lyme / encephalitis
- Detoxification
- Immune balancing and restoration
- Alzheimer's disease, early dementia and cognitive decline
- Autoimmune diseases
- Fibromyalgia
- Chronic viral and infectious diseases
- Kidney and metabolic dysfunction
- Long COVID/ME/CFS
- Stiff-person syndrome

Supportive Therapy Before and After

- Pre-treatment (1-3 weeks before): Mineral support (IV/sublingual/oral), HDIVC, B vitamins, amino acids
- Before/after: PC IVs for neural support, detox.
- Spermidine IV 3 times a week for 2 weeks following TPE to decrease senescent cells
- Chelation - diagnostically before and therapeutically 3-4 days after TPE
- Consider low dose rapamycin to help increase autophagy and normalize T cell function

IVIG Usage and Dosing

- What is IVIG
- When to use:
  - 1) To help support general increasing health span
  - 2) For Lyme patients still affected; treating active infections.
- Dosing for indications after each plasmapheresis treatment:
  - Health span: IVIG 2g
  - Lyme and TBDs: IVIG 10g

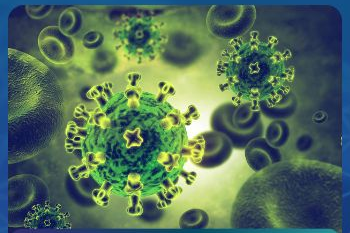
What Patients Can Expect

Frequency of Treatments

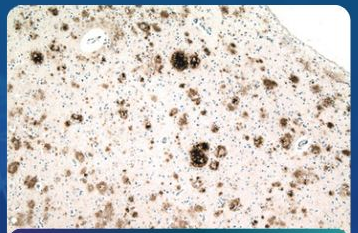
- How many and how often?
  PANS/PANDAS/autoimmune, POTS, etc – total of 5-7 treatments, completed over the course of 3 weeks
  - Detox/general health – once or twice a month for 2-5 months
  - ME/CFS,Long COVID w/ elevated autoantibodies ???

Is there down time?

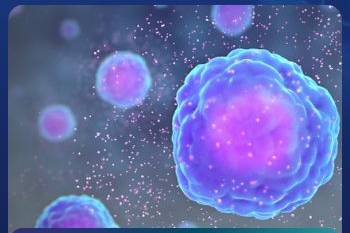
- What should patients expect immediately before and after?
- What to expect: first time, fatigue from toxic load, headache



Environmental Toxicants



Misfolded Proteins



Inflammatory Cytokines

Mycotoxins and Old Antibodies

Effects on Detox and the Immune System

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Plasmapheresis for Chronic Illness and Health Optimization

Calms Inflammation
By filtering out inflammatory proteins and immune triggers, plasmapheresis helps reduce the “background fire” of inflammation that drives brain fog, joint pain, and fatigue.

Supports Natural Cellular Cleanup
Clearing harmful substances from the blood gives your cells room to do their own repair work, like recycling damaged parts and renewing energy factories (mitochondria).

Resets Immune Balance
Plasmapheresis removes excess antibodies and immune complexes that keep the body stuck in overdrive. This can help the immune system recalibrate and respond more appropriately.

Plasmapheresis for Chronic illness and Healthspan Optimization

Reduces Oxidative Stress
By lowering toxic load and stressed proteins, plasmapheresis helps limit the buildup of damaging molecules (free radicals) that wear down cells over time.

Shifts Key Health Markers in a Positive Direction
Studies show improvements in blood sugar, cholesterol, and proteins that track with overall health as well as normalization of immune regulation

Helps Remove Environmental Toxins
Plasmapheresis can reduce levels of heavy metals and pollutants that accumulate in the bloodstream and contribute to persistent inflammation, leading to the illnesses that appear with age.

Plasmapheresis for Detoxification

- Can help detox environmental toxicants
  - Heavy Metals
  - Microplastics
  - Pesticides
  - VOCs: volatile organic compounds
  - Solvents
  - Mycotoxins
  - PFAS: Per-and Polyfluoroalkyl Substances

Plasmapheresis for Tick-borne Diseases

- TPE does not directly affect the bugs, it will help reduce toxin load and decrease interfering antibodies and the antibodies associated with neurologic symptoms
- Approach: proper screening, testing, supportive therapies and other IVs before and after
- Unless acute decompensation, it is optimal if we start the patient with a detox protocol before plasmapheresis and ensure appropriate trace mineral status
- If a patient has active infections, and is going to receive a series of 3 or more plasmapheresis treatments within a short period of time, it is important to cover them with either antibiotics or IVIG after the 2nd or 3rd treatment because of the decrease in antibodies especially with Bartonella

Plasmapheresis for Long Covid???

- TPE within first year of symptoms in long COVID patients can lower markers of inflammatory macrophages and inflammatory proteins, normalize lymphocyte subpopulations (like CD8+ T cells and NK cells), and increase positive tissue repair biomarkers.
- Reduction of neurotoxic, pro-inflammatory circulating mediators is believed to contribute to symptom improvement
- A large placebo controlled study of people with longer period of Long Covid in Spain failed to show improvement

Strategies to Improve Outcomes of TPE in Long Covid

- Consider NAC and low dose nicotine to help mobilize spike protein off the endothelial surfaces
- Nattokinase and lumbrokinase to decrease endothelial biofilms
- Normalize Vit D
- Replace trace minerals
- LDN,Ivermectin 0.2-0.4mg qd for 1-3 months
- Anticoagulants to minimize microclots for 1-3 months before TPE

ME/CFS ???

- The data is cloudy here, also there is definitely a subset with good response to fatigue and brain fog.
- Researchers have focused on elevated autoantibodies especially to the adrenergic and muscarinic GPCR (G protein coupled protein receptors) which are are reduced after TPE and also other types of apheresis.
- Elevations of these alone are not diagnostic of ME/CFS or Long Covid but reductions in elevated levels post therapy have correlated with patient improvement.
- TPE can improve endothelial dysfunction and platelet function and this may be contributing to patient improvement
- Best results were with added low dose 2 grams IVIG
- Consider low dose rapamycin to help increase autophagy and normalize T cell function

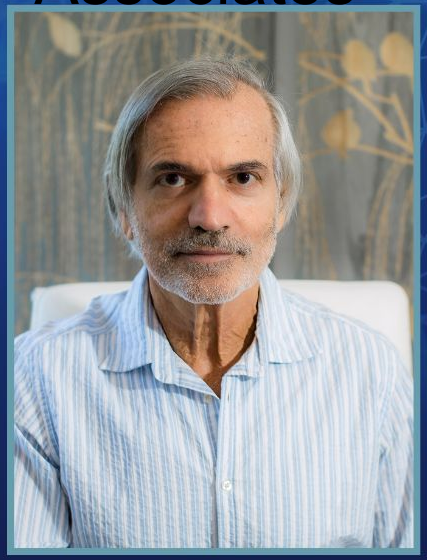
A measurable step forward for detox, a key therapy for severe neurologic symptoms - PANS/PANDAS

Rebalance our immune pathways

Remove senescence cells

Support health optimization as we age

Eric Gordon, MD | Medical Director, Gordon Medical Associates



Dr. Eric Gordon works with some of the most complex patient cases at Gordon Medical Associates. He looks beyond the diagnosis to find the right order of treatment for those patients who just don't make sense to other doctors. Using the latest research, cutting-edge technologies, and years of expertise in autoimmune conditions, mitochondrial dysfunction, tick-borne diseases, and other complex and chronic issues, he guides his patients on the path to healing.

In addition to clinical practice (45+ years), Dr. Gordon is engaged in clinical research and is the President of Gordon Medical Research Center. He has focused on bringing together leading international medical researchers and thought leading clinicians focusing on ME/CFS, Lyme disease, and autoimmune diseases. Dr. Gordon is an internationally recognized expert on complex, chronic illness and is regularly asked to speak for such organizations as ILADS, Infectolab-Americas, ISEAI and others.

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References: Labs & Testing Options

- Toxin screening before/after.
- Monitoring detox efficacy (e.g., binding mycotoxins).
- List of common panels
- Basic blood work, CBC (to determine blood volume to be filtered out), CMP, fibrinogen, PT, PTT

References: Labs & Testing Options: Optimal Labs

- EmpowerDX PFAS
- Mycotoxins Panel
- Genetic testing
- Cytokine
- Oxidative Stress
- Metabolomics
- Microplastics
- Ayus Toxin Panel

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