Intravenous plasma therapy in an adult cerebral palsy patient

Keywords: Brain derived neurotrophic factor (BDNF), Intravenous, plasma, plasma growth factors, neurogenesis, autologous

Abstract: The use of platelet-rich plasma has been a common alternative treatment within the field of regenerative medicine. With over 30 years of use and thousands of published research articles in various disciplines and treatment applications, the safety and efficacy of local administration (site specific) PRP is well understood. However, the intravenous administration of plasma treatments and the extent of its treatment benefits is not known. Here, we report the case of an adult cerebral palsy patient who received a dose specific intravenous plasma.

Case Report: This case report highlights the rapid and significant improvement to cognition, reading abilities, and fine motor skills in an adult cerebral palsy patient following intravenous injection of the TruDOSE™[1] plasma treatment. Follow up was continued out to 6 months where improvement to all domains was observed, recorded, and noted by patient and provider.

Patient Information: Upon examination, the 52-year-old CP patient describes himself as one who has spent a lifetime retraining his nervous system to overcome the limitations of CP (i.e., able to complete a marathon and being a manager of a sporting goods store). Upon gait and function examination, visible impairments were noted by physician. The patient sought treatment for fine motor skill improvements (ie typing, holding a pen, etc.) because these activities would be delegated to employees to save, what he felt, was embarrassing. The physician recorded baseline statistics and asked for patient to do a reading sample. The patient declined because he could not read.

Therapeutic Intervention: During the same day as examination and following informed consent, the patient received a TruDOSE™ intravenous plasma treatment. The plasma treatment is dose specific utilizing the patient's own (autologous) blood. The treatment follows a specific protocol and utilizes proprietary equipment to produce a specific dosed treatment. No adverse effects or events were observed.

Timeline: Before leaving the office, the patient experienced immediate sensations throughout his nervous system that started at the base of his skull. When the patient arrived home, he video recorded his attempt to read an excerpt from his company's handbook. The patient visibly struggled and can be heard saying "this is all wrong".

Clinical Progression: The next morning the patient recorded his attempt to read a city ordinance. Significant reading improvement was observed in contrast to the night before (cadence, transition words, comprehension, time, clarity). At 1 week follow up, the patient reported a significant improvement with his energy. Fine motor skills had improved with the observation of patient holding a pen and writing. At the 3-month clinical follow up, the patient reported continued improvement with energy stating he has "worked 38 days straight with brutal daily hours". Additionally, the patient reported he now can type.

At the 6 month follow up, the patient reported continued improvement with writing and typing. Additionally, the patient reported he read a "COVID guideline" out loud to all employees at a staff meeting. This is an achievement the patient remarked "I have never done anything like that before."

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Discussion: Neural plasticity is a phenomenon that aids brain recovery after the damage produced by events like stroke or traumatic injury. Plasticity can be understood as the body innately manipulating specific neuronal pathways and synapses for therapeutic and clinical interventions that will improve our health. Cerebral palsy is commonly understood to be the result of a stroke in utero (in the uterus) that results in a wide range of neurological effect towards infants.

Neural plasticity is different between adults and children. It has been assumed that brain plasticity peaks at a young age and then gradually decreases as one gets older. It has been reported and suggested the young are most likely to show an increase in intrinsic neural capacity with training, whereas the old are more likely to recognize gains due to flexibility in strategy use. This can be understood as the body being hard wired as we age and less likely to show neurological improvements in a variety of domains (cognition, fine motor, etc.). While promising therapies like; deep brain stimulation, non-invasive brain stimulation, neuropharmacology, exercise, and cognitive training exist non possess innate regeneration ability, or the ability to encourage neurogenesis.

Platelets within the plasma treatment provides a plethora of biological growth factors capable of restoring tissue function through the delivery of immunomodulatory and neurotrophic factors. While studies continue to focus on the most easily quantifiable aspect of the platelet (i.e., platelet derived growth factors, VEGF, TGF-beta, IGF, and EGF), the genomic and proteomic repertoire of the platelet offers significantly greater regenerative potential than what has been ascribed to the common growth factors identified above, particularly for acquired neurological conditions. For example, white matter injury is associated with neurological dysfunction in a variety of conditions, ranging from cerebral palsy to vascular dementia. Brain-derived neurotrophic factor (BDNF), a member of the neurotrophic family, plays critical roles in the survival, growth, and maintenance of brain and peripheral neurons. Platelets are recognized to provide the richest source of this powerful protein. Platelets, therefore, represent a medicinal warehouse of factors capable of promoting tissue repair and functional restoration of neurogenesis.

The current case report highlights the significant fine motor and cognitive improvement of an adult cerebral palsy patient following the TruDOSE™ plasma treatment. Contrary to our understanding of adult neural plasticity, these progressive clinical effects demonstrate a neural regenerative ability from the plasma treatment. Immediately following the treatment, the patient reported a sensation throughout the entire body and demonstrated significant reading improvements within the first 24 hours of treatment. At each follow up appointment, quantifiable gains were observed and recorded with fine motor and reading abilities that progressively improved out to the 6 month follow up. Considering no additional therapies were used, neural plasticity and neurogenesis can be assumed and attribute solely to the plasma treatment.

[1]Dosing inaccuracy has historically limited the scientific understanding and potential treatment discovery from autologous cell therapies, like plasma treatments. The TruDOSE™ Technology (Bridging Biosciences, LLC) solved this dosing inaccuracy problem whereby learning and helping providers produce dose specific treatments to individual patients. Unexpectedly, the implementation of the TruDOSE™ Technology led to the discovery of an intravenous treatment protocol (TruDOSE™). Since 2018, close to five-thousand TruDOSE™ treatments have been given having symptom effects not described within the published literature.